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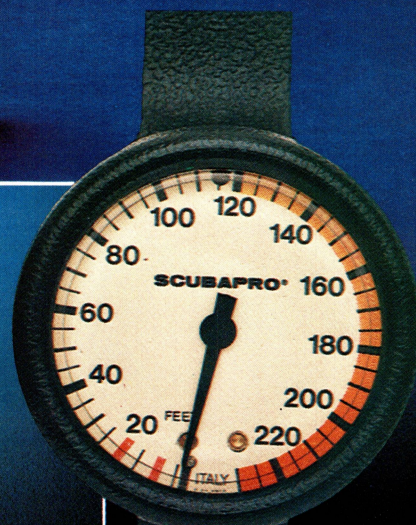
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skin diver

Volume Thirty-two Number Three

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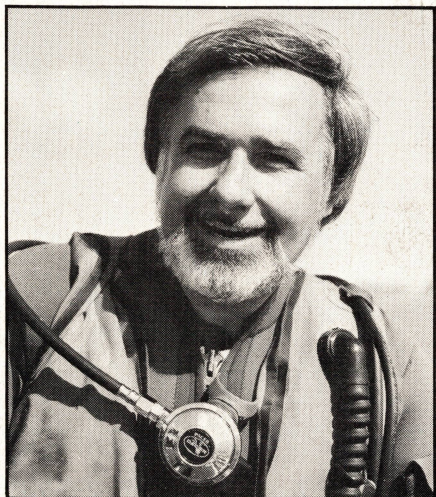
COVER

While more northern latitudes suffer under winter's cold, diver Donna McLaughlin enjoys the freedom of diving without a wetsuit—in clear, tropical water. Paul Tzimoulis took the photo using a Nikon F camera with motor drive and 16 mm lens in an Oceanic Hydro 35 housing, wide-angle strobe, E64 film.

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SDM Editorial

BY THE PUBLISHER



In the January issue SKIN DIVER revealed a serious problem which exists in the Caribbean and other tropical resort areas of the world. Divers by the thousands are showing up with their C-cards, but are unskilled and ill-equipped to handle the open water conditions of the area. This problem is affecting all of us, from the dive operator to the customer who is an experienced diver. Resort divemasters must risk their lives daily making deep water and surface rescues. Experienced divers are forced to go to mediocre sites because divemasters are afraid to subject the whole group to the best places, where currents might be running. Dives become less flexible as worried divemasters exercise tighter controls in hopes of preventing accidents. Experienced divers pay the penalty.

There are some obvious questions related to this dilemma. How do people who cannot dive obtain C-cards in the first place? Where has our scuba training system gone wrong? Is the problem growing? At present, there is no hard data available for answering these questions. No one has conducted a survey, developed a research plan or amassed any evidence. However, we do have a few clues and lots of theories.

First, let's tackle the question, "Is this problem growing?" The answer is a combination yes and no. It is quite likely that the problem has always been there, but was perhaps obscured. The recent boom in dive travel has suddenly revealed the magnitude of the problem. Based on statistics in SDM's new 1983 reader survey, an estimated 450,000 divers are now traveling to warm water resort locations

WHY CAN'T JOHNNY DIVE?

in the Caribbean and Florida Keys. When you expose that many divers to the watchful eyes of experienced divemasters and resort operators, deficiency patterns begin to emerge. For the first time in its 25 year history, we can monitor and measure the proficiency of a giant segment of this sport. And, what we see is frightening. As dive travel continues to grow, the slice gets larger and the magnitude of the problem will increase.

Who is at fault? It is very tempting to place all of the blame on the instructors. They are easy targets because of their obvious link with student training and inability to defend themselves. When a diver at a resort screws up the typical excuse given is, "My instructor never told us about that." Nobody ever checks back with the instructor to find out if the diver's copout is really true. The resort divemaster accepts the statement as is and figures the instructor was a jerk. Admittedly, there are some instructors at fault. Good and bad exist in every segment of our society and scuba instructors are no exception. However, the great majority of today's scuba instructors are darn good. They follow a well organized teaching outline, test their students every step of the way and keep careful records.

If the instructors are doing such a good job of teaching, then how come we have so many incompetent divers turing up at warm water resorts? Perhaps the transition from classroom to wall diving is too rapid. Today's scuba student enrolls in a basic class, goes through a few weeks of pool training, and completes the course with three to five open water sessions in a local quarry, pond, lake or ocean. The total bottom time of the open water scuba experiences is less than one hour. Yet, two weeks after receiving their C-cards these same neophytes are on a jet heading for Cayman or some other resort where their very first dive may be on a drop-off to a dizzying depth of 100 feet. They have the card to prove they are certified, and that card permits access to any dive boat or any dive being offered at the resort. Who is responsible for this Catch-22? Is it the instructor back home, the resort dive operator or the system?

Another major factor contributing to the present resort dilemma is the basic human frailty known as forgetfulness. When

complex skills remain unused for a long period of time they are frequently forgotten and must therefore be re-learned. We see it all the time. For example, at the Riding Rock Inn, Bahamas, 50 percent of every new boatload of divers has completely forgotten how to use the Repetitive Dive Tables. Another 20 percent never really learned in the first place. Yet every diver aboard the boat is expecting to make three dives daily, two of which are going to be wall dives. Each week, the divemasters re-teach the Repet Tables to all new arrivals and within two to three days of practice all of the customers are once again proficient...at least until they depart from the resort.

The problem is that we have no practical system in-place for refreshing or re-training certified divers prior to their departures on their annual dive vacations. A dry period of 11 and one-half months between dive vacations is far too long to remain safely proficient. Much is forgotten during these months. Scuba skills become rusty. Self confidence can fade away. When the diver attempts to re-enter the now alien world of diving it's a perfect setup for a panic situation. A person who has not dived for six months or longer should really consider taking a refresher course prior to his/her next dive vacation. A more attractive alternative is to keep diving regularly to maintain those scuba skills. A dive trip to the islands every six weeks would be nice, if you could afford it. But, how about local dives—just for practice?

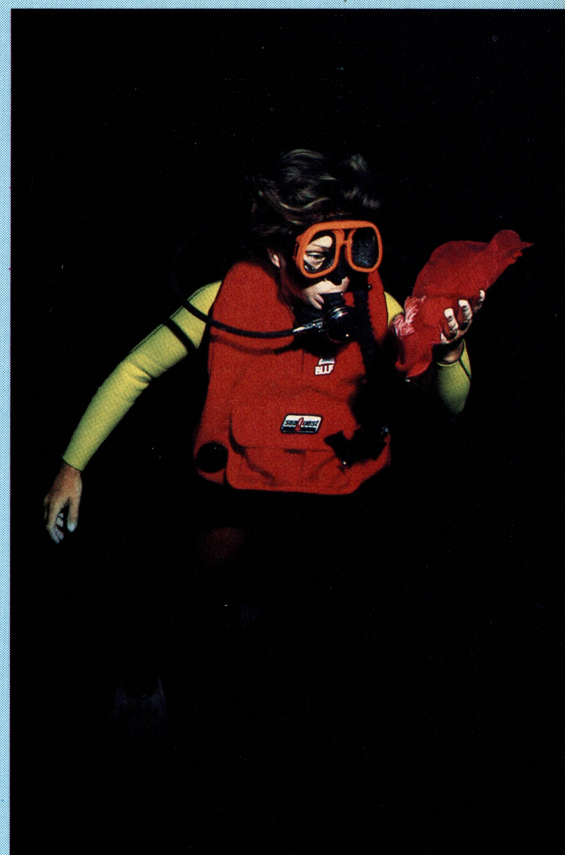
Still another contributing factor to the crisis is the hard economics of the dive resort business. Quite often, expert divers, newly trained divers, students in training and neophytes are all thrown together on the same boat for the same excursion. No attempt is made to separate experienced divers from novices and place them on different boats. How does a dive resort operator distinguish the pros from the new divers? Frequently, the clerk at the shop handling the trip bookings is not a dive instructor. He simply checks for C-cards as he was told to do. Perhaps in the future we shall begin to see more specialization at dive resorts. There may be dive resorts or dive operators who cater specifically to experienced divers. Others may concentrate on beginner and refresher trips and services. Consumer markets have a natural way of developing services to fit demands.

Will this situation improve? Eventually, yes. We are already on our way to improvement simply by recognizing that a problem exists. It is not being swept under the carpet and ignored. The instructor associations are aware of the situation and are trying to find ways to fill the gaps within our present training system. ~~✗~~



A Spanish Dancer in the Red Sea

TEXT AND PHOTOGRAPHY BY JACK MCKENNEY



One of the prettiest dives I've ever made took place one night at Howard's Temple, off Sharm El-Shiekh at the tip of the Sinai Peninsula in the Red Sea. During the nocturnal hours all of the soft corals—in shades of hot pink, scarlet red, creamy yellow and pastel orange—fanned out their gorgeous plumes to feed on drifting plankton. Lionfish, normally hidden in protective crevices during the day, would float about, ready to pounce on unsuspecting minnow-like fish. Plate sized angelfish blundered about, mesmerized by our bright movie lights. One of the most vibrant and exotic creatures we came across that night was one of the world's largest nudibranchs—*Hexabran-*
chus sp.—called the Spanish dancer.

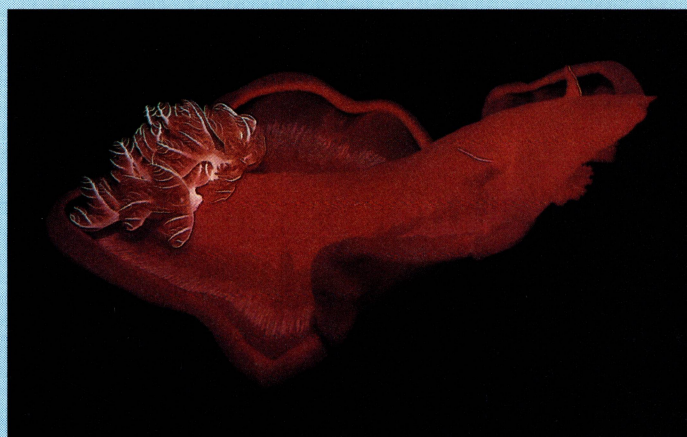
There are approximately 2500 known species of nudibranchs living in most of the tropical and temperate seas of the world. They come in all shapes and a myriad of colors and sizes; some so small they can pass between grains of sand and others so big—like the Spanish dancer—that they sometimes reach a length of 18 inches.

Discovering *Hexabranchus* grazing on a patch of white coral polyps startled the eye. Because of its great size and brilliant scarlet color it stood out like a lone beacon on a dark summer night. As it feeds, it creeps slowly on its soft, yet firm muscle that resembles the sole of a shoe.

The Spanish dancer is velvety smooth to the touch and the flower-like bouquet

on its back is actually its gills. All nudibranchs are carnivorous and feed on living prey—usually upon hydrozoans and bryozoans. Some feed on barnacles and still others feed on the eggs of their own kind. Still others are cannibalistic and feed on different family members. As far as we know however, the Spanish dancer feeds on coral polyps.

The Spanish dancer is especially spec-



tacular when it has moved from its grazing place to open water. Here, as it swims, the name Spanish dancer aptly applies. The mantle spreads out and strong undulations ripple from the front of the animal to the rear, providing a weaving movement through the water. Set

against the black background of a night sea it is an incredibly beautiful and intriguing sight.

Nudibranchs have evolved from the characteristic shell-covered mollusk into an animal that biologically and chemically is an actively defensive one. Most nudibranchs are brilliantly marked to warn their enemies that they taste bad. Even in a supposedly defenseless position—such

as swimming in open water—we never witnessed any fish attempting to eat or molest the Spanish dancer.

Hexabranchus is a simple animal by man's standard, but aesthetically it is one of the most beautiful invertebrates to be found underwater. ➤



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Rx

FOR DIVERS

BY FRED BOVE, M.D., PH.D.

I am writing this article from the Institute for Environmental Medicine at the University of Pennsylvania in Philadelphia. I have the opportunity to visit this institution periodically. It contains one of the nation's largest hyperbaric and dive research facilities. While here I have had the opportunity to discuss the problem of multi-level diving. This is a common procedure in tropical waters: You make a deep, short dive, then come up to a shallow reef to complete your dive. Here is an example: You dive the wall at Grand Cayman, 120 feet for 10 minutes. Then you swim up on the reef to 40 feet and spend another 30 minutes underwater before surfacing. According to the Navy air tables, your dive is logged at 120 feet for 40 minutes, and requires a stop at 20 feet for 4 minutes and one at 10 feet for 25 minutes. How then do you make this dive and not get decompression sickness?

Remember that the Navy Air Decompression Tables were originally designed for the surface supplied hardhat diver. The depth of his work was known and the diver stayed at that depth to complete the work. Long jobs required multiple dives by a team of divers, but always to a single depth and usually for a set time. Under these conditions, the tables work nicely most of the time. When scuba became available, divers were no longer constrained by hoses from the surface and could swim in all directions, horizontally and vertically. This freedom, however, left us without an appropriate set of tables and even now, we have to adapt the Navy tables to profiles for which they were not designed.

Let's look at the example I mentioned. If we consider the dive as two dives, it is possible to come up with an answer. Consider the 120 foot for 10 minute dive. If we surfaced from the dive for a brief in-

terval, then went back to 40 feet for 30 minutes, we could use the repetitive dive tables and calculate our no decompression time in the usual way. For 120 feet, 10 minutes, we surface as a D diver. With a surface interval less than 1:09 hours we remain a D diver and have 37 minutes of residual nitrogen time at 40 feet. The no decompression limit for 40 feet is 200 minutes, while our total time is 30 minutes plus 37 minutes residual nitrogen time or 67 minutes—well within the no decompression limit. According to this calculation, we can do a 120 foot for 10 minutes dive, then a 40 foot for 30 minutes dive with no decompression stops. Now the question we should ask is whether this is a safe dive or not. The surface interval and residual nitrogen tables contain a safety factor which accounts for short surface intervals. You can check this by calculating your decompression for two 60 foot for 30 minutes dives with a two to three minute surface interval and comparing the result with a single 60 foot for 60 minute dive. [Although the tables allow 60 minutes at 60 feet, after a 30 minute dive to 60 feet, and no surface interval, you have 36 minutes of residual nitrogen time to add to your next 60 foot dive.] Because of this built in conservatism with repetitive diving, you will usually be safe in calculating a multi-level dive using the tables with no surface interval.

I discussed this concept with Mike Gernhardt, a research diver working here at the institute. Mike is working on a similar problem for commercial diving.

Using a computer model, Mike estimates that for *sport diving*, using two levels on a single dive, and keeping both dives well within the no decompression limits, the repetitive dive approach is safe. Other rules must also be followed:

1. You cannot exceed the O group designator on the repetitive dive table.
2. You must dive no deeper than 130 feet.
3. You must shorten the no decompression limits by five minutes between 60 and 130 feet; 30 minutes for 40 and 50 feet.
4. If you are working hard or diving in cold water, *you must not* use this procedure.
5. You should spend three to five minutes at 10 feet as a safety precaution before surfacing.
6. You must ascend 30 feet or more between the two levels.
7. You must always make the deep dive first.

Remember, these rules are only educated guesses on how to estimate the proper decompression when your dive profile contains several distinct depths in a single dive. Single dive profiles with a short, deep exposure followed by a long, shallow exposure are common, especial-

ly when diving in tropical areas where the reefs end at a deep drop-off. You should be ready to estimate a safe decompression schedule with this kind of dive, and as usual, preplan the dive to follow the profile closely. Since none of these concepts has been well tested in actual diving exposures and are a theoretical guess at the correct decompression, you should always include a wide safety margin. This is best done by planning the shallow part of your dive at 30-40 feet where the long no decompression time limit is usually never approached.

If another dive is planned, you should consider the first multi-level dive as two dives and calculate the repetitive group letter as you would any other two dives. For example, a typical dive day might begin with a 120 foot for 10 minute wall dive, with a return to 40 feet for 30 minutes before surfacing. After a two and one-half hour surface interval you will go from a G to a D repetitive group and will have time for a 40 minute dive at 40 feet while staying well within the no decompression limit. If all of these calculations are hard to follow, you should review the use of the dive tables since the calculations should be at your fingertips at all times: If they are not, relearn them.

I have discussed these ideas with several colleagues, including Dr. Bob Goad from the U.S. Navy, Dr. Bruce Bassett of San Antonio, and Dr. Eric Kindwall of Milwaukee. All feel the concept is valid and safe if the precautions are followed.

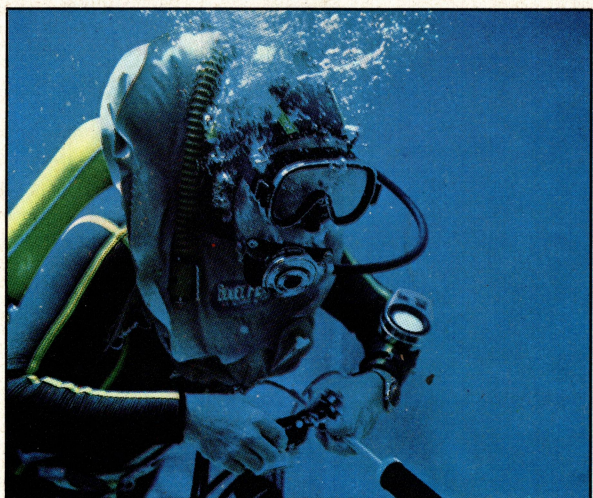
Although the decompression schedules for these multi-level dive profiles are not completely tested, dive profiles following the method described here are used successfully in commercial diving.

Any time you do a multi-level dive, you should leave plenty of safety margin on the no decompression limits. By following these basic rules you will be able to cover a wider depth range on a single dive. In tropical diving especially, you will have an opportunity to make a short excursion to deeper depths, view the scenery, then return to the shallow area.

MALARIA PRECAUTIONS

We have heard from one diver who contracted malaria while on vacation in the tropics. Although this disease is usually of little concern in the continental United States, it is common in many other areas of the world. If you plan a tropical dive trip, ask your travel agent or physician to check on the need for malaria prophylaxis before you go. The disease is contracted from mosquitoes and since you cannot avoid being bitten, you must take the medication before, during, and after your trip to prevent the disease from developing. Consult a physician for the necessary medicine if there is a chance of becoming infected while traveling. 

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"In effect, this means that the watch decompresses with the diver."

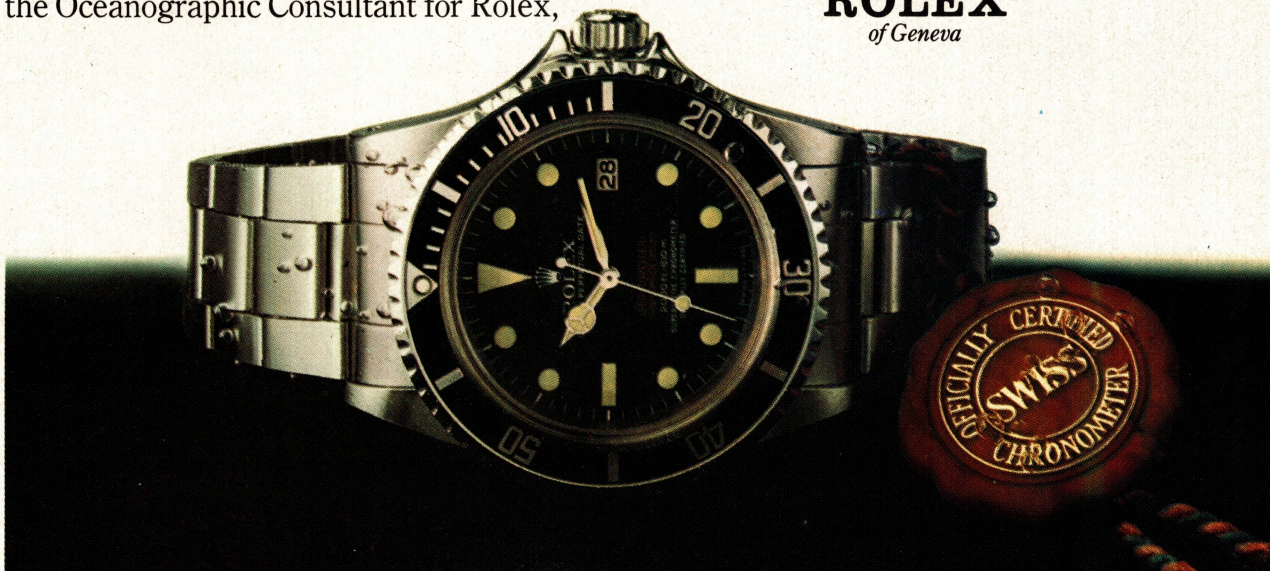
T. Walker Lloyd has worked as diving supervisor for Dr. George Bass, when excavating a 4th-century Roman wreck in the Aegean Sea.

He was also a member of the first team to saturate on 95% nitrogen and 5% oxygen at a depth of 100 feet. During the experiment, the team made working dives of up to 265 feet on compressed air. So he understands better than most the importance of highly accurate and reliable equipment.

The Rolex Sea Dweller is certainly a remarkable watch. And yet apart from the gas escape valve and a specially strengthened case, it is made in exactly the same way as any other Rolex Oyster.

Which means that if T. Walker Lloyd ever gets tired of underwater exploration, his watch will be equally at home in the frozen Arctic, the heat of the Sahara Desert, or at the top of Mount Everest.


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Pictured: The Rolex Sea Dweller Chronometer. Available only in stainless steel, with matching bracelet.

WALTER FEINBERG

On December 13, 1982, Walter Feinberg died after a long illness. He was 70. For the last 28 years Feinberg had been the driving force behind the Boston Sea Rovers and their annual weekend diving clinic. It was Feinberg who guided the Sea Rovers from the first clinic in the basement of the Huntington YMCA in Boston to the most successful diving program in the world. Feinberg was generous with his time, knowledge and con-

tacts to anyone who wanted to start clinic programs. Many of the successful shows now running had guidance from him.

In 1971, Feinberg received the NOGI award for distinguished service from the Underwater Society of America. During the presentation Harry Shanks said, "Walter Feinberg is one of that rare breed of people who are catalysts in the growth of ideas and advancements—people who give willingly of their time and expertise to further a cause or bring forth a solution. Scuba diving and the underwater world is a passion in his life, and he has done probably more for the sport in

the climate he set up to bring the doers together and the encouragement he gave them to have no little plans. He has often said the Underwater Society was conceived on his back porch. He is one of the founders and the key instigator of the Boston Sea Rovers Clinic, the oldest continuing seminar in the world, dedicated to the underwater world—over 25 years of being the place that the leaders of diving got together to communicate on a one to one basis...."

Feinberg died in Newton Centre, MA. He leaves his wife, Miriam, and two daughters. ✻

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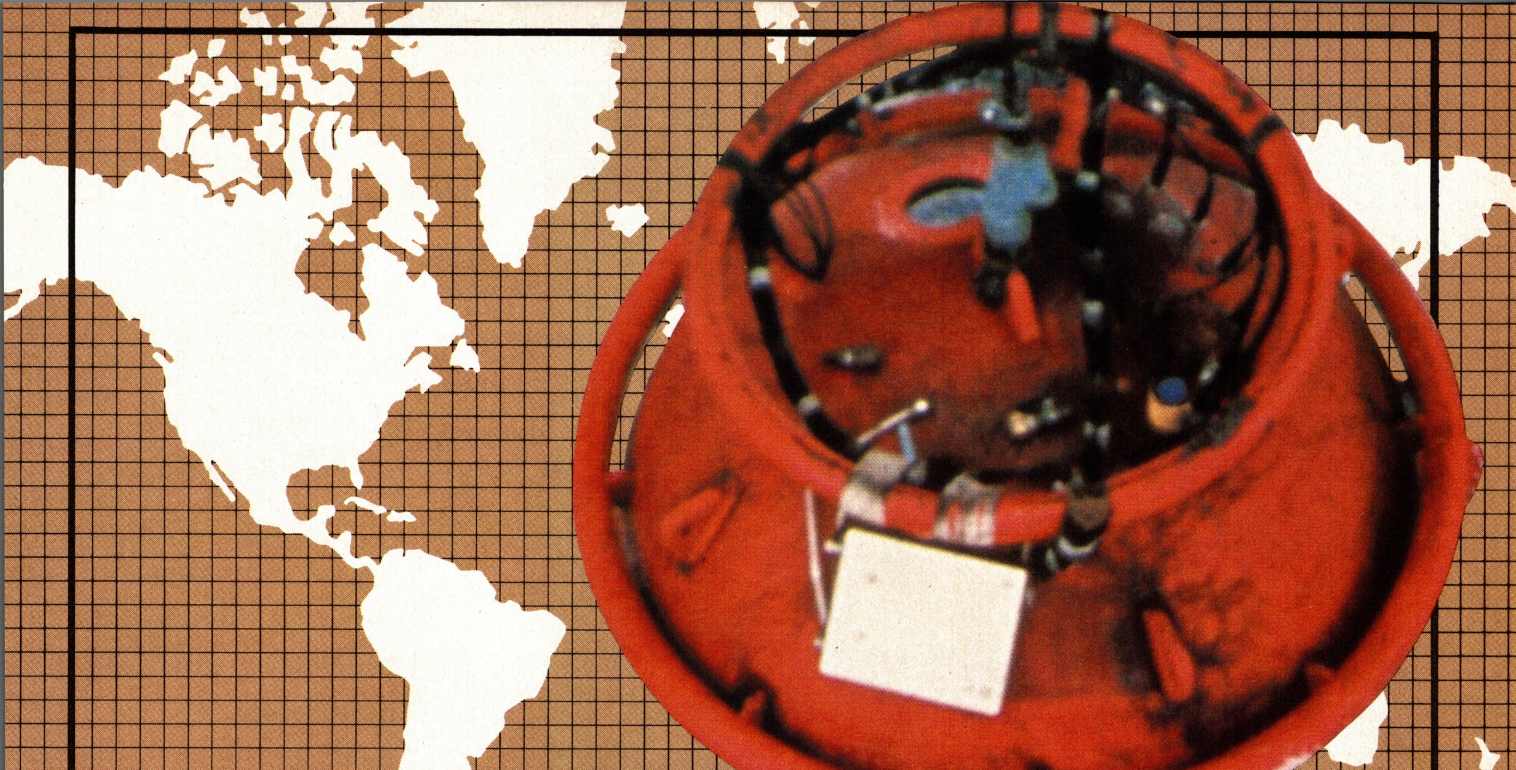


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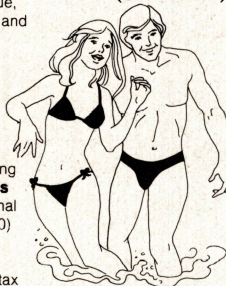
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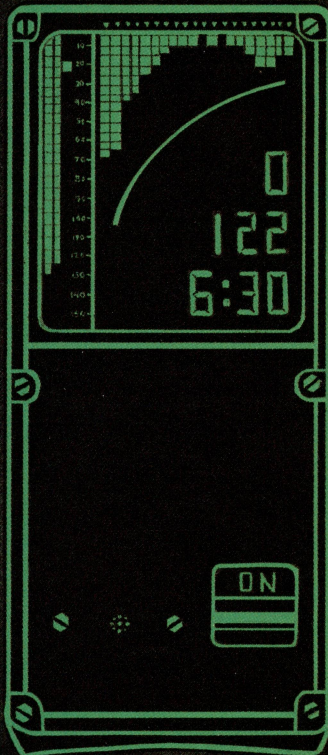
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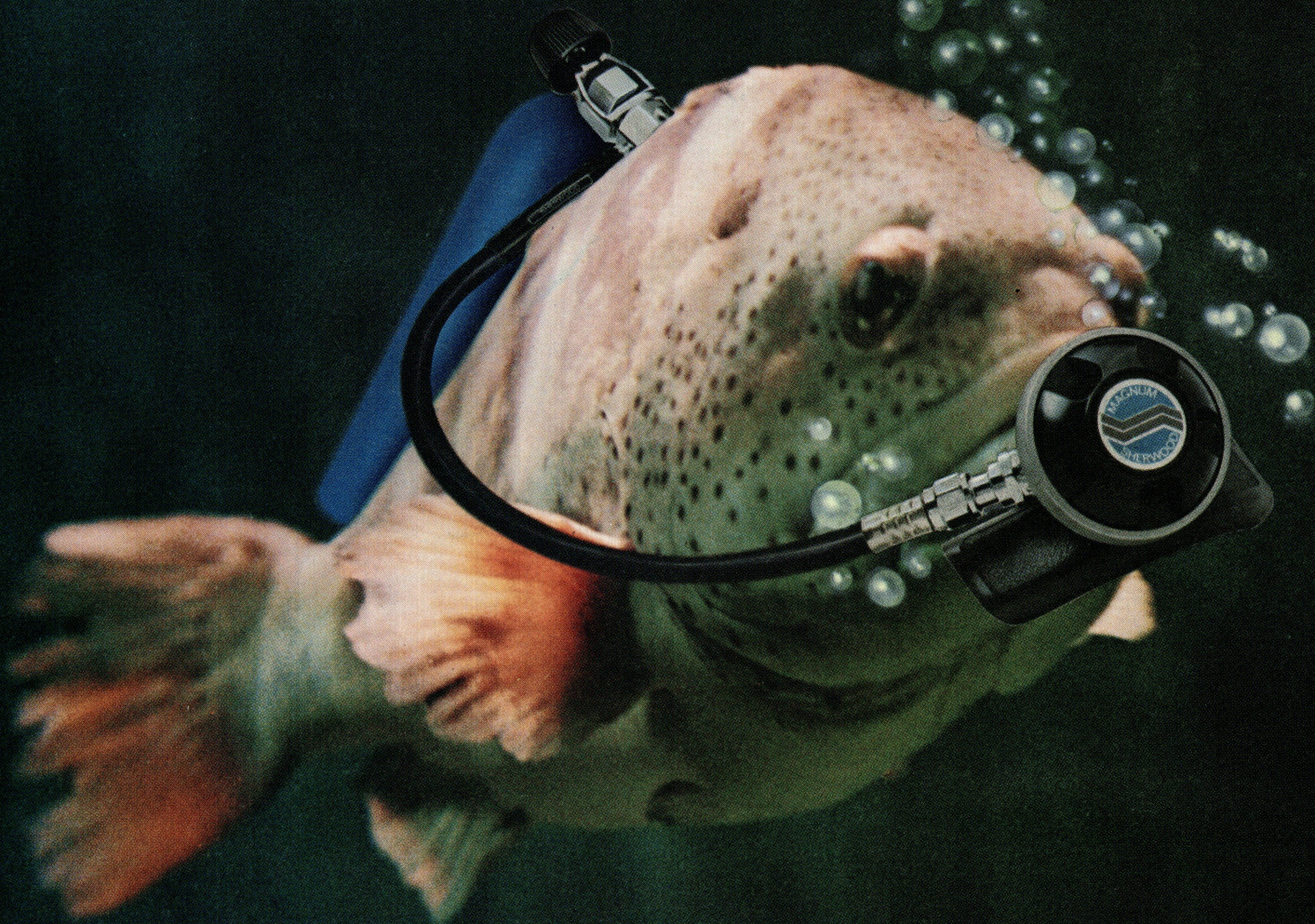
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Scuba Quiz

Category: Night Diving

By Dennis Graver

Diving at night is exciting and beautiful. Training is recommended, but many who dive at night have never had any. There is value in taking a night diving course, as you will see when pondering the following questions. The answers are on the next page.

1. Which of the following is a diver least likely to see on a night dive in the ocean, compared to a day dive in the same area:

- ☐ A. Bioluminescence
- ☐ B. More marine life
- ☐ C. More intense colors
- ☐ D. More plant life

2. It is recommended that night dives be made:

- ☐ A. At familiar locations
- ☐ B. Under favorable environmental conditions
- ☐ C. From a boat
- ☐ D. All of the above

3. Which of the following practices is *not* recommended for night diving:

- ☐ A. Attaching a chemical glow tube to the tank valve or snorkel
- ☐ B. Waving a dive light up and down to get a buddy's attention
- ☐ C. Shining a light on another diver's chest to gain attention
- ☐ D. Using an anchor line for descents and ascents

4. Diving at night is more difficult than diving during the day. Which of the following problems is the most significant for a diver at night:

- ☐ A. Buddy separation
- ☐ B. Judging the rate of ascent
- ☐ C. Disorientation
- ☐ D. Marine life hazards

5. The total number of lights (both above and below water types) recommended for a pair of divers making a night dive from shore in an unlighted location is:

- ☐ A. Two
- ☐ B. Four
- ☐ C. Six
- ☐ D. Eight

6. Which of the following statements is false:

- ☐ A. Marine life is less disturbed by red light than by white light
- ☐ B. Adapting the eyes to very low light levels for at least 30 minutes before a night dive improves a diver's vision
- ☐ C. Bright, glaring light entering the eyes during the day can reduce one's ability to see at night
- ☐ D. All of these statements are false

7. The well-equipped night diver will have:

- ☐ A. A compass and a whistle
- ☐ B. Extra weight and a low pressure BC inflator
- ☐ C. An alternate source of air
- ☐ D. All of the above

8. White strobe lights are particularly useful for:

- ☐ A. Marking exit locations
- ☐ B. Dive boat relocation when suspended under a boat
- ☐ C. Emergency signaling at the surface
- ☐ D. B and C, but not A

9. Select the true statement:

- ☐ A. Rechargeable batteries produce light longer than non-rechargeable batteries
- ☐ B. Rechargeable batteries perform best when only partially discharged and fully recharged
- ☐ C. The light output from rechargeable batteries tapers off very slowly when the batteries are nearly discharged
- ☐ D. None of these statements are true

10. Which of the following skills is more essential for night diving than for diving during the day:

- ☐ A. Buddy breathing
- ☐ B. Repetitive dive calculations
- ☐ C. Surface swimming
- ☐ D. Underwater navigation

Scuba Quiz

Answers: Night Diving

1. D. More plant life. Plants respond to light, so there will not be more plant life at night. Other forms of life will be in greater abundance, however, because most marine life is nocturnal. Creatures can be seen at night which are seldom, if ever, seen during the day. Colors are intense when illuminated at close range, and the glow of bioluminescence adds a new dimension to underwater experiences.

2. D. All of the above. The ideal situation is to make a daytime dive in calm clear water at a familiar dive site and then to dive the same location at night from a boat. Shore entries and exits can be difficult at night, and unfamiliar locations can be hazardous. Rough, turbid water must be avoided.

3. B. Waving a dive light up and down to get attention. This is a standard signal meaning something is wrong. To gain attention, it is recommended that a light be waved rapidly from side to side. Another standard light signal is a large O to signify OK or all is well.

4. C. Disorientation. In water, our senses for spatial orientation are impaired, and we rely heavily on visual input for reference. At night, the deprivation of visual input can lead to disorientation and even vertigo. The problem is greatest when neither the surface nor the bottom can be seen. It is for this reason that use of a line for ascents and descents is recommended.

5. D. Eight. Dive lights should not be used out of the water, so each diver needs a small light to use for dive preparation. Two larger lights, preferably the amber, flashing type, should be aligned one above and behind the other to designate the exit point. Each diver should carry a primary and a back-up dive light.

6. D. All of these statements are false. Not so, because statements A, B, and C are true. A red filter on a light makes the light less bothersome to marine life. Dark adaptation for at least 30 minutes enhances vision for night diving. Bright light entering the eyes for extended periods temporarily disrupts parts of the eyes used for seeing in low levels of light.

7. A. A compass and a whistle. All divers should have an alternate air source. No recreational diver should dive with excess weight, but a low pressure inflator mechanism for buoyancy control is highly desirable. Underwater navigation is an important skill for diving at night, so a compass is needed. A whistle is an effective surface signaling device at night.

8. D. B and C, but not A. White, flashing lights above the water are emergency signals and can be seen for miles. These lights are also used for marine navigation and could cause confusion. A small strobe light beneath the surface is an excellent marker for a dive boat. It is a good idea for a night diver to have a strobe, but it is important to use it properly.

9. D. None of the above. Disposable batteries last longer than rechargeables. The output from these declines gradually, while the output from rechargeables is fairly constant until nearly depleted. For the best service, rechargeable batteries should be discharged completely and fully recharged.

10. D. Underwater navigation. At night, the diver must rely on navigational skills for orientation. Good compass navigational ability is essential for those who dive at night. A compass heading for orientation should be set at the beginning of the dive, and position awareness should be maintained throughout the dive. It should be noted that the formation of surface fog during a night dive is not uncommon, so exit bearings can be important.

Were there one or two items of information previously unknown to you? Diving at night is easier, safer and more enjoyable when information such as that shared in this quiz and the Advanced Diver Series is known. Knowledge and techniques to enhance night diving are available in advanced and night diving specialty courses. Consider expanding your opportunities with some night diving training soon.



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Diver's Calendar

March 2 The Underwater World of Eugenie Clark. Museum of Natural History, New York City. Films, slides and discussion. (Contact: American Littoral Society, Highlands, New Jersey 07732; (201) 291-0055)

March 12 Boston Sea Rovers 29th Annual Underwater Clinic. Day and night sessions will both be held at John Hancock Hall, Boston, MA. (Contact: Bunky Hodge, 174 Beech St., Rockland, Massachusetts 02370)

March 12 Third Annual Dive to Adventure with Jack McKenney Film Presentation. York High School, Elmhurst, IL. (Contact: UnderSeas Scuba Center, 626 N. Addison Ave., Villa Park, IL 60181; (312) 833-8383)

March 19 Deadline for entering the Underwater Photographic Society (Northern California Chapter) photographic competition. Winners to be announced and displayed at the SEA 83 film festival in May. (Contact: Maurice J. Schlatter, P.O. Box 9612, Berkeley, CA 94709)

March 24-27 Underwater Canada sport diving show and film festival. Constellation Hotel Convention Centre, Toronto. Exhibits and speakers. (Contact: Underwater Canada, 1220 Sheppard Ave. E., Willowdale, Ontario M2K 2X1)

March 25-26 Second Annual EGMEA Underwater Carnival and Scuba Symposium. SUNY/Binghamton. (Contact: Dave Thomas, Department of Physical Education, SUNY/Binghamton, Binghamton, NY 13901; (607) 798-3962)

March 26 Underwater New York—Twelfth Annual Diving Symposium. Exhibits, artifacts and speakers. (Contact: Peter Odell, 81 Steel Street, Auburn, New York 13021)

March 27 Third Annual Underwater Easter Egg Hunt to fight leukemia, La Jolla Shores, CA. (Contact: Kim Skaalen (619) 224-5090)

April 23 Thirty-second Underwater Film Review. John Hancock Hall, Boston, MA. (Contact: Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Massachusetts 02117)

April 23 Seventeenth Annual Underwater Symposium. Park Plaza Hotel, Boston, MA. (Contact: Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Massachusetts 02117)

April 24 New England Divers 10th Annual Equipment Expo. Manufacturer exhibits, speakers, movies and door prizes. (Contact: New England Divers, 131 Rantoul St., Beverly, MA 01915)

April 30 Seaview 83—St. Louis Film Festival. Stan Waterman and Rick Frehsee keynote speakers. (Contact: Seaview 83, St. Louis PADI Training Facilities Association, P.O. Box 10221, Lambert Field, St. Louis, MO 63145)

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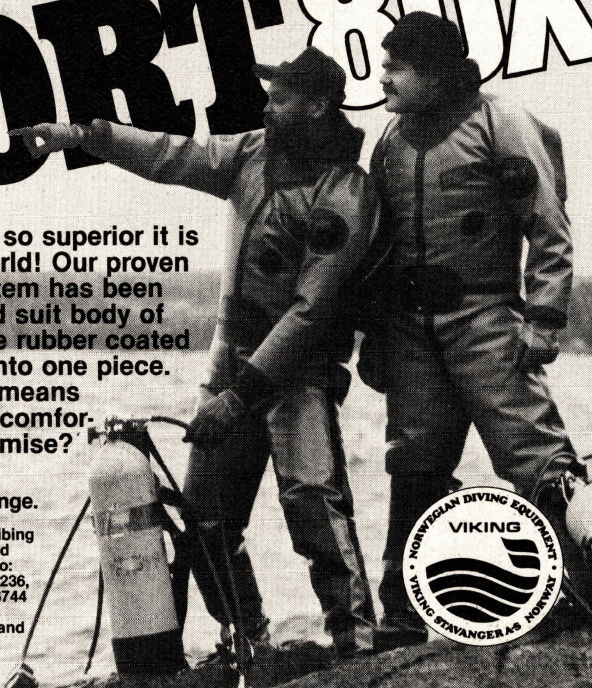
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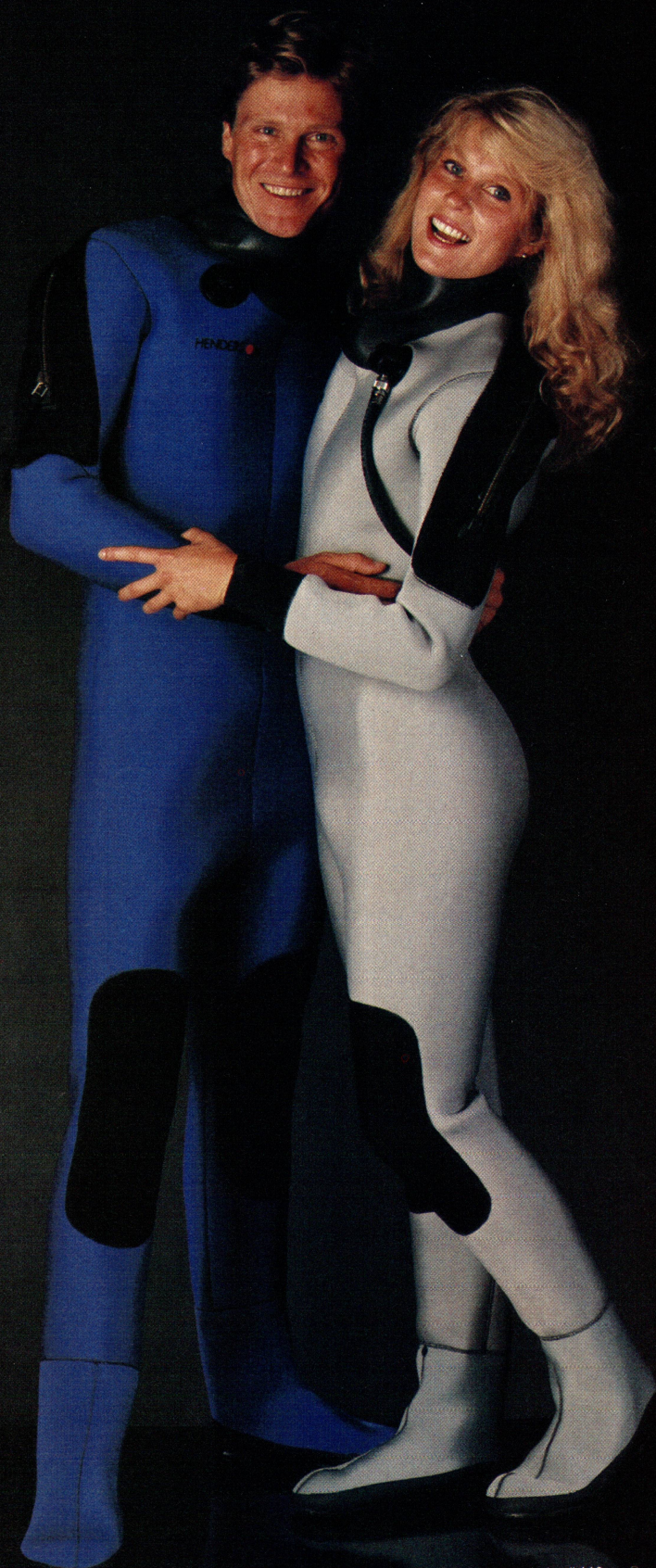
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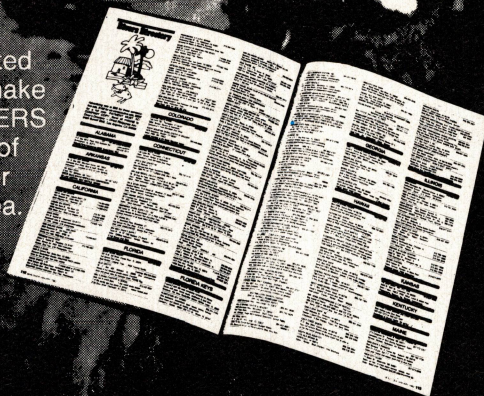
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SHIPWRECK GRAVEYARD

A virtual graveyard of shipwrecks has been found near Whitehall, NY, with sophisticated sonar equipment. Over 20 sunken vessels, including canal boats, barges, commercial sailing ships and three War of 1812 gunboats were found.

Jim Kennard, who led the sonar team, is a veteran of over 150 shipwreck finds. He was assisted by diving partner Scott Hill and Art Cohn, the Whitehall project coordinator.

Whitehall, New York is considered to be the birthplace of the United States Navy and was the southern terminus for transportation on Lake Champlain, prior to the opening of the Champlain-Hudson canal in 1823.

The sonar survey was part of a series of underwater archaeological and exploratory projects conducted by the Champlain Maritime Society under the supervision of the Vermont Division for Historic Preservation. 

GILBERT FOUND

Officials of the Shipwreck History Interpretation and Preservation Society (SHIPS) have positively identified an uncharted wreck society members found last summer. The *W.H. Gilbert*, a 324 foot steamer, sank in 1914. Society president Larry D. Coplin said the wreckage showed signs of being rammed amidships, but was not cut in two as historical reports say. Only the 324 foot hull rests on the floor of Lake Huron, 25 miles from Alpena. The superstructure, which held the cabins and wheelhouse, was not attached to the wreckage.

The *W.H. Gilbert* was the largest package freight steamer built up to 1892. Although she was built in Saginaw, Michigan, the ship was sold to the then Minnesota based American Steamship Company and carried ore, wheat and coal.

On May 22, 1914, she was sailing in heavy fog when rammed amidships by the steamer *Caldera*. Reports say the ship took only five minutes to sink. The *Caldera* escaped with serious damage and was then docked in Cleveland.

Because the *Gilbert* wreckage lies at a depth in excess of 200 feet, Coplin says the divers will not pursue the ship as a society sponsored film project. 

AMIDON TO NAUI

Walt Amidon was recently appointed director of industry relations for the National Association of Underwater Instructors (NAUI). This will be the second time Amidon has served in this capacity (previously 1978-1979). He will be the primary contact with dive stores and instructors served by the organization. He will also be in charge of press releases and will oversee the marketing of NAUI's services and products. 

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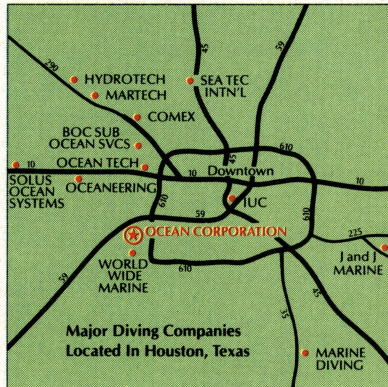
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BECAUSE

The Ocean Corporation is a commercial diving company, not just a school. Our facilities, equipment and training aids are the best, and our diving systems are as up-to-date as possible... because much of the equipment is used by our diving operations division to perform actual diving contracts in the field. Ocean Corporation has successfully completed many underwater jobs for various industrial clients over the years... including specialized underwater inspections, maintenance and repair work. For example, we did the world's first commercial underwater repair job in a nuclear power plant. And most of our divers have been graduates of our own school.



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The Ocean Corporation is a convenient and exciting place to go to school. Houston is one of the fastest-growing and most dynamic cities anywhere. It is a city of expansion, energy and youth (the average resident's age is in the mid-20's). Houston offers every conceivable kind of entertainment, from sports events, ultra-modern discos and open-air theater to rough-house local rodeos, chili cook-offs and the new Texas-size

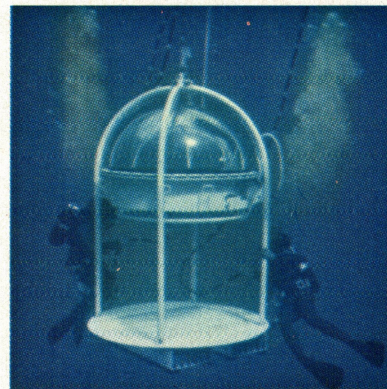


country-western dance clubs. Reasonably priced adult and singles apartments are readily available within walking distance of the school, and fast-food to luxury restaurants are nearby. The semi-tropical climate is wonderful, the sport diving is great and the folks are friendly.

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The Ocean Corporation management and instructor staff have long-term experience in the international offshore oilfield diving business. Retired ex-military divers and sport scuba divers don't run the school...commercial divers do. For example, the President of The Ocean Corporation, Larry

Cushman, was Vice President and Europe/Africa Area Manager for Ocean Systems, Inc. for three years...with responsibility for all North Sea diving and underwater construction operations. He also worked six years as a manager for Oceaneering International, Inc., another of the world's largest commercial diving contractors. Ocean Corporation managers and instructors know today's diving business...first-hand, from recent experience.

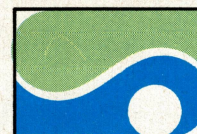


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The Jensen Beach campus of Florida Institute of Technology will offer a 22 week Commercial Diver Program beginning June 28. The program includes 800 hours of instruction in all aspects of air and mixed gas diving. Much of the same equipment and facilities used in the Underwater Technology program will be utilized in the 22 week program.

Students will also gain specialized training in topside and underwater cutting and welding, underwater still and video photography, nondestructive testing and underwater demolition.

The program is approved by the Association of Commercial Diving Educators (ACDE). Upon successful completion of the course, the student will receive a diver training certificate, or an option to transfer portions of the course for credit toward the two year Underwater Technology degree program.

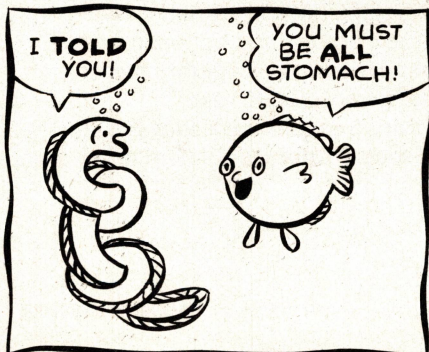
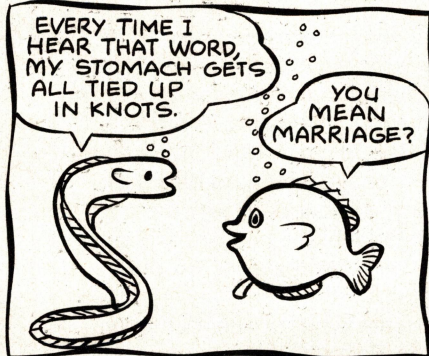
Additional information about the course can be obtained by contacting the FIT Admissions Office at 1707 N.E. Indian River Drive, Jensen Beach, FL 33457.

CLARK PROGRAM

The Underwater World of Eugene Clark—a slide and film presentation and talk on sharks, garden eels and more—will be held at the Museum of Natural History, New York City on March 2. Tickets for the 7:30-9:30 pm program are \$6.

For information contact the American Littoral Society, Highlands, NJ 07732; (201) 291-0055.

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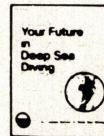
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Film Festivals 'n Symposiums

UNDERWATER '83

The Underwater Film Review is scheduled for April 23, at John Hancock Hall on Berkeley Street, Boston, Massachusetts. This, the 32nd edition of the Boston show, will feature the films of John Stoneman and is produced for the diving community of the northeast by Fred Calhoun. The review will also feature John Fine, author of *Exploring The Sea*, presenting *The Dolphin and the Boy*.

The Underwater Symposium, the daytime session of Underwater '83, will be presented at the Boston Park Plaza Hotel just one block from John Hancock Hall. A series of in-depth presentations on oceanography, scuba diving and the marine sciences, it will feature lectures augmented with motion pictures and slides. The Underwater Symposium runs from 10:00 am-6:00 pm. Concurrently, a display of diving related equipment will be featured in the exhibits area.

Tickets are \$7 for the Underwater Sym-

posium and \$7 for the Underwater Film Review. They may be acquired at the door on the day of the program, in advance from various dive shops in the North Atlantic area, or by writing to Fred Calhoun, P.O. Box 291, Back Bay Annex, Boston, Massachusetts 02117. >#>

DIVE TO ADVENTURE 1983

The seventh annual Dive to Adventure underwater symposium and film festival will be held Saturday, April 16 at the State University of New York, Purchase (Westchester County). The program is presented by the Scuba Sport Rites Club of Rye, NY in cooperation with the Underwater Society of America.

The daytime program will begin at 11:00 am and will offer more than 20 different sessions including diver safety, travel, medicine, wreck diving, commercial diving, accident management and underwater photography. Major exhibits of commercial diving, artifacts, travel, instruction, equipment, ocean environment and other items of interest will also be presented.

The evening program will feature Paul Tzimoulis, editor and publisher of SKIN DIVER Magazine as the master of ceremonies. John Stoneman will make a special appearance and present a new film. Andre Galerne, a pioneer in commercial diving and president of International Underwater Contractors will be the keynote

speaker. There will also be the presentation of the Diver of the Year award and the winners of the underwater photo competition. A meet the speakers party will follow the evening program.

For more information write to: SSRC, P.O. Box 644, Rye, NY 10580; or call (914) 381-4134. >#>

UNDERWATER CARNIVAL

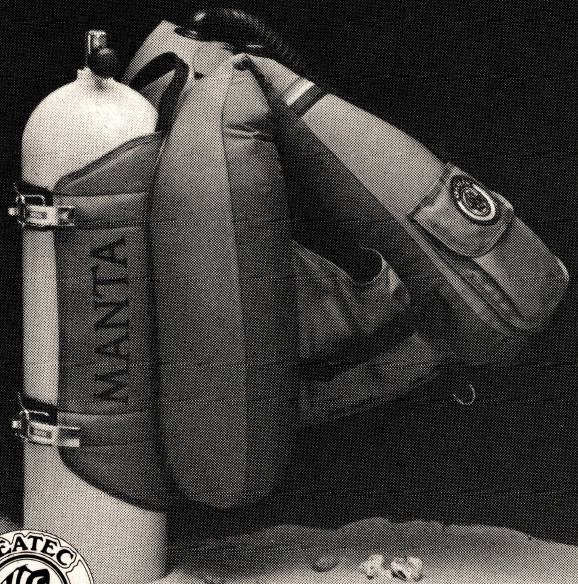
The second Annual Ed Gillette Memorial Educational Association (EGMEA) Underwater Carnival and Scuba Symposium will be held on Friday, March 25 (7:30 pm-10:30 pm) and Saturday, March 26 (9:00 am-5:00 pm) at SUNY/Binghamton, Binghamton, NY.

A series of lectures, seminars and slide presentations will be given on Friday night and Saturday morning in Lecture Hall 8. Topics will include archaeology of Caesaria (Israel), recovering canal barges from the Delaware River, underwater photography, whales, and scuba diving safety.

Activities Saturday afternoon will be held in the SUNY pool, West Gym, and include submarine dart throwing, snowless sled races, underwater hockey, and underwater tricycle races. All participants must be certified divers, and tanks, regulators and air will be furnished.

Proceeds will go to the SUNY/Binghamton Physical Education Department and the EGMEA. For further information

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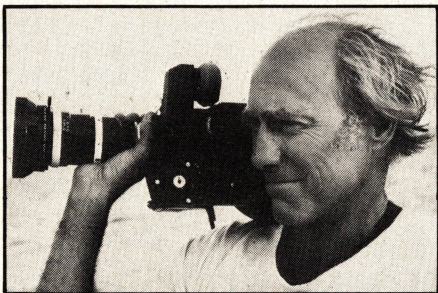
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contact: Dave Thomas, Department of Physical Education, SUNY/Binghamton, Binghamton, NY 13901. 

SEA VUE EXPOSITION

The Southeast Virginia Underwater Exposition '83, sponsored by Sea Vue, Inc. and the Virginia Sea Grant Program at the Virginia Institute of Marine Science, will be held on Saturday, April 9 at the Chamberlain Hotel in Hampton, Virginia.

The program will be divided into afternoon workshops (12:30 pm-5:00 pm) and an evening film festival (7:00 pm-9:30 pm). Concurrent afternoon workshops will cover underwater photography techniques, commercial diving, treasure hunting, underwater archaeological work in Virginia, field maintenance of dive gear and spearfishing. The evening film festi-



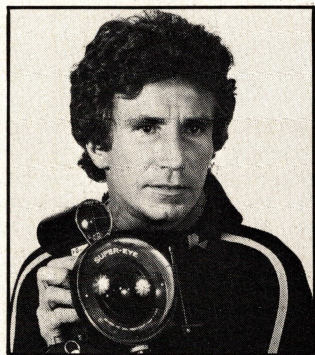
val will feature Stan Waterman and his films. Dive equipment exhibits and door prizes will also be included.

Advanced registration for Sea Vue '83 is preferred and will guarantee individuals a spot in the workshop sessions and film festival. For more information and to register, individuals should contact Jon Lucy, VIMS, Gloucester Point, VA 23062; (804) 642-2111. 

SEAVIEW '83

The St. Louis PADI Training Facilities Association and St. Louis Community College at Meramec are co-sponsoring the Seaview '83 film festival on April 30.

Two programs are planned—the daytime program will feature lectures by both



Stan Waterman and Rick Frehsee. The evening program will again feature these gentlemen and their work.

For information contact: Seaview '83, St. Louis PADI Training Facilities Assoc., Lambert Field, Box 10221, St. Louis, MO 63145; (314) 291-6066. 

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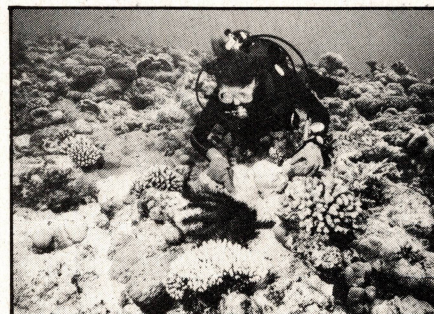
CROWN-OF-THORNS

Disaster or Natural Blessing?

TEXT AND PHOTOGRAPHY
BY TED RULISON

Greg and I flipped back out of our dive boat and looked down through the clear water to the sloping surface of Oby-an (pronounced objon) Reef below. We were one of six teams that had volunteered to spend a whole day trying to clean up at least a part of the horde of huge crown-of-thorns starfish. *Acanthaster planci* had infested the reef, one of the favorite dive sites of Saipan (the new capital of the Commonwealth of the Northern Mariana Islands, 120 miles north of Guam), for almost a year.

Lying there on the surface, surveying the destruction which had occurred to the reef below, I knew Greg's anger, like mine, was directed at the voracious star-



fish slurping and gobbling up "our" beautiful reef. Immediately below us were at least 15 to 20 starfish, 20-24 inches in diameter. They had consumed so much of the living reef that the areas of white, denuded coral were almost confluent, giving the reef a sickly, ghostly, snow-covered appearance.

We finished our pre-dive preparations and drifted on down to begin the sweep of this part of the reef. It was not a question of finding the culprits, but just how many we could gather at a time, either in large game bags, or on long stringers, and bring them back to our dive boat. On the boat, the starfish were unloaded into large barrels, and left cooking in the sun until they were dead. I was surprised later in the day to see that after only a few hours in the barrels, the giant 24 inch starfish were reduced to less than half that size by our improvised solar cookers. This was certainly a much less expensive way of destroying the starfish than by injecting them with formalin (formaldehyde), as has been done with infestations in other areas.

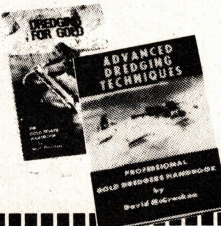
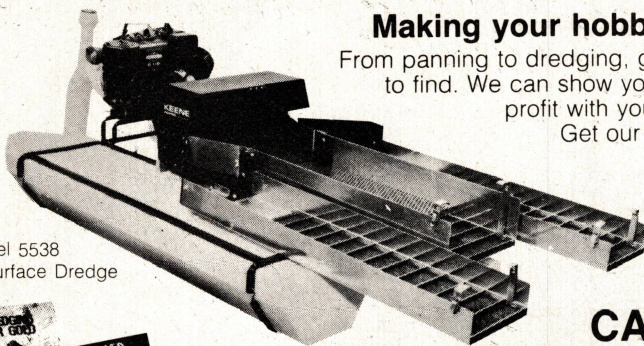
At the end of the day, we all gathered on the beach to share a picnic supper

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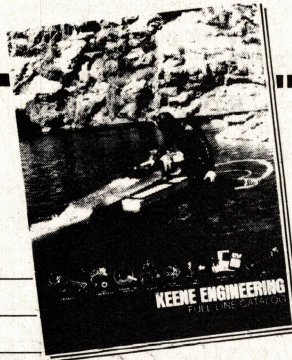


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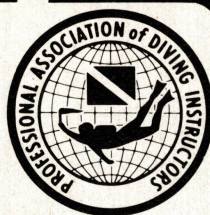


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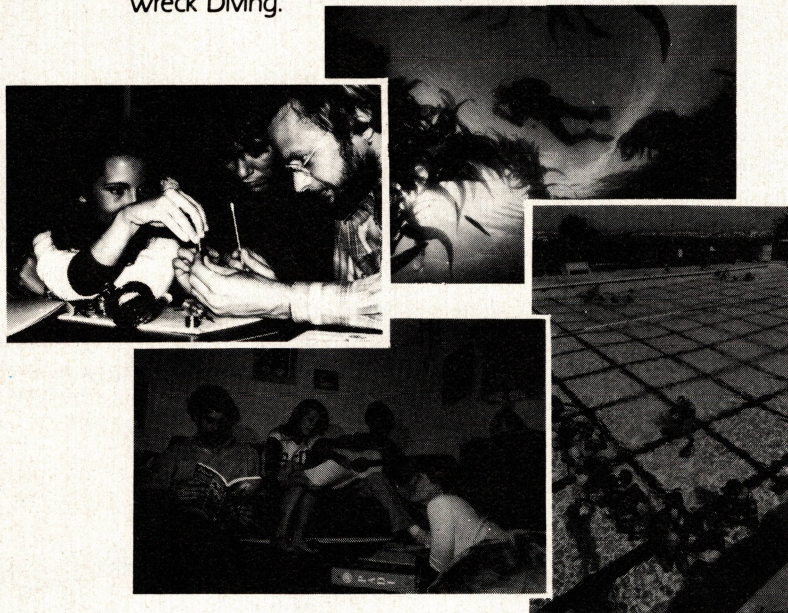
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CROWN-OF-THORNS

and a feeling of some small accomplishment for having tried to preserve our beautiful dive site. Also, we compared our wounds from the vicious spines of the starfish, their revenge upon us for our attempt to remove them from this choice feeding ground.

In preparing for this crown-of-thorns sweep, we had tried to enlist the support of the Northern Marianas Department of Marine Resources, but were disappointed by their lack of interest in what we proposed to do. When we asked what they *did* intend to do about what we perceived as a serious problem, they said their plan was only to check population counts and movement at stated intervals. This official inaction was one of the things which most intensely motivated our dive club's sweep. But, no more than a week later, a lengthy article in the Pacific Daily News (Guam, Feb. 22, 1982) gave a fuller explanation for the official position of observation only, and provided information which I think will interest divers around the world.

Discovery of the crown-of-thorns plague along the northeastern coast of Australia in the late 1960's led to grave concern for the eventual survival of the coral reefs in the Pacific and Indian Oceans. Many theories were suggested to explain this sudden explosion of *Acanthaster planci* and, because of the extensive damage the reefs were suffering, various control measures were attempted with questionable success. But, also, this notoriety focused more scientific interest on the life cycle and habits of the crown-of-thorns. Much has been learned since then which has led to new hypotheses by some of the involved scientists. It may well be, they now believe, that crown-of-thorns invasions are cyclic and natural—that is, the result of natural events, and not, as was feared, the result of man's activities, such as the overzealous clearing of the reefs of triton trumpets (a known predator) by shell collectors.

To start with, it is known that each female *Acanthaster planci* starfish lays millions of eggs each year, with far less than a one percent survival rate. Crown-of-thorns living north of the equator spawn in June and July, while those south of the equator lay their eggs in December and January. The principal food of the larvae is phytoplankton, and unless there is a generous supply of this nutrient, larval growth is slow, and they are decimated by predators. But, increased phytoplankton bloom enhances chances for survival. Dr. Charles Birkeland, director of the University of Guam Marine Laboratory, believes that in many cases the epidemics of starfish are preceded by special conditions which favor an exceptionally

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CROWN-OF-THORNS

heavy phytoplankton bloom at the time the starfish eggs are hatching. It appears that terrestrial runoff of unusually heavy rains—especially after a dry season or drought—may provide sufficient nutrients to stimulate a profuse growth of phytoplankton. The absence of crown-of-thorns invasions around atolls is explained by the minimal amount of terrestrial nutrients on these islands which could be washed out to sea. Richard Randall, also working in the Guam University Marine Laboratory, has confirmed that increased nutrients definitely enhance the survival rate of the starfish larvae. The survivors of this larval stage appear as 20-24 inch in diameter adults three years later, the adolescent starfish hiding within the protection of the reef during the interval.

Historically, a crown-of-thorns infestation appeared in Guam in the spring of 1979, three years after supertyphoon Pamela poured 27 inches of rain on the island in 24 hours in 1976. Dr. Birkeland predicted in a Guam publication in 1980 that the starfish would appear around Saipan three years after that island received a torrential 45 inches of rain in two days in August 1978. On schedule, in the summer of 1981, the Department of Marine Resources of the Northern Marianas reported the appearance of thousands of crown-of-thorns starfish at Obyan Beach, Saipan—the site of our sweep some months later.

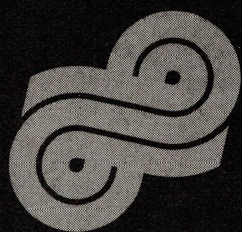
But, Dr. Birkeland believes that in addition to these crown-of-thorns attacks being natural phenomena, which probably have been occurring for centuries, they also may be a blessing in disguise. He reasons that the starfish create open space on the reef for different young species of plant and animal growth and thus contribute to diversity in age and speciation on the reef. Dr. Birkeland has found that the crown-of-thorns will eat any of the 267 species of reef coral and 30 species of fire and soft corals found in the Guam area. However, it prefers the branching corals, eating two square feet of coral polyps each day. Fortunately, it is a careless eater, and leaves behind ungrazed areas which help to repopulate the reef, and, in the interval, algae quickly cover the denuded areas to perpetuate a supply of food for the grazing fish.

Dr. Birkeland's final conclusion is that the crown-of-thorns invasions pose no serious threat to the coral reefs, their most devastating effect being upon the hotel/resort owners and tourists. But, I still feel better for the effort we made to fight back that Sunday at Obyan Reef. 🐠

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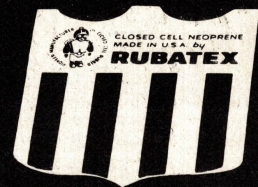
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CALIFORNIA BEACH DIVE PHOTO COMPETITION

BY STEVE ROSENBERG

It's a thrill to receive recognition among your peers for your photographic achievements. However it's sometimes difficult to win your first award. One of the major drawbacks of most photography competitions is that there is no way of compensating for the vast differences in locale, equipment and time available. The photographer using a simple Nikons system on one or two dives a month cannot expect to compete against the one who spends two months in the South Pacific behind the viewfinders of an assortment of sophisticated cameras. Alameda Divers, a Northern California photography-oriented dive club, has addressed this challenging problem and come up with the California Beach Dive Photography Competition.

The entire event, from picture taking to presentation of awards, can be accomplished over the course of a two day weekend. At the one hour registration which takes place at 8:00 am on Saturday, the contestants are provided with one roll of 36 exposure, ASA 64 Ektachrome film, maps of dive locations and a schedule of the weekend's events. The

rules are simple. All film must be exposed while on beach dives within the Monterey, Pacific Grove and Carmel Bay areas and returned to the Aquarius Dive Shop prior to the 2:00 pm deadline that afternoon. All participants are required to have a dive buddy, who is fee-exempt if not competing, a buoyancy control device, a depth gauge and a pressure gauge. All entrants are encouraged to use a flotation device, including dive boards and surf mats, but are precluded from using any type of motorized boat.

All photographers who enter the competition are grouped within one of three divisions according to their relative experience. The Novice Division is limited to photographers with less than two years of experience who have not won place awards in any major contests. The Open Division is reserved for photographers who have earned more than \$200 in income in any given year from the sale or promotion of their photography. The Amateur Division consists of those photographers who fall somewhere in the middle. All photographers are given the choice of shooting and entering in one or more of five categories within each division: 1) above water dive related, 2) humorous, 3) macro-photography, 4) normal lens photography and 5) wide-angle photography.

After the film is returned and checked in by the contestant's registration number, it is then rushed for processing to the Bay Photo Lab in Soquel. This lab was

selected because of its willingness to handle the special processing.

The processed slide film is returned Sunday morning after the contestants have enjoyed a relaxing evening of socializing and commiserating with their fellow photographers. Each contestant is then allowed one hour to select a total of three slides which may be entered in any combination in one or more of the five categories. At that point, the judges, who can only identify each slide by the contestant's registration number, decide the winners. The guidelines, which emphasize quality photography, allow the judges to withhold awards in the amateur and open divisions if they don't feel the entries deserve awards.

In 1981, the first year of the competition, the judging and awards ceremonies were conducted by Jim and Cathy Church. In 1982, the competition was held on July 10 and 11, drawing 60 avid underwater photographers from throughout California and nearly doubling the turnout of the prior year's contest. The judges in 1982 included Bob Hollis, president of Oceanic U.S.A., and Bob Commer, long time member of the Northern California Chapter of the Underwater Photographic Society.

For information on the 1983 California Beach Dive Photo Competition, to be held on July 9 and 10, contact Alameda Divers Dive Club, c/o Divers Exchange, 649 Pacific Ave., Alameda. CA 94501.

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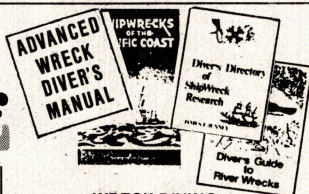


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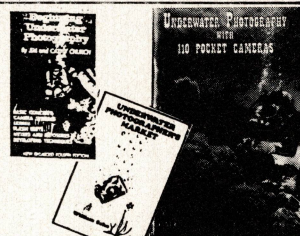
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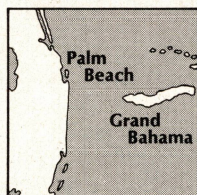
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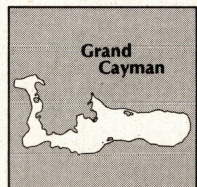
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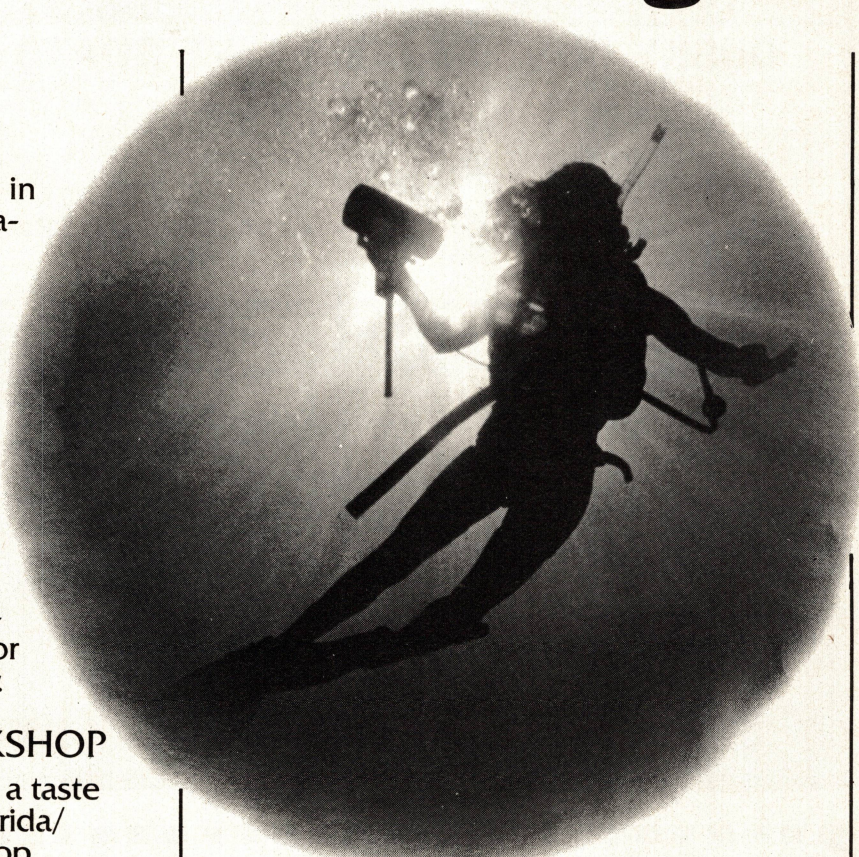


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Patrick John Smith was a NAUI scuba instructor, only 26 years old, when he lost his battle against leukemia in September 1977.

On April 18, 1981 Kim Skaalen and 75 other scuba divers participated in the first Annual Underwater Easter Egg Hunt to raise money for the San Diego Chapter of the Leukemia Society of America. Kim, a close friend of Pat's, initiated the idea for the underwater hunt to benefit other unfortunate victims of this life-robbing disease. The \$1,700 raised by local divers that cold, damp morning at La Jolla Shores went into the Patrick John Smith Memorial and toward the continuing fight against leukemia.

Pat Smith became an instructor in 1973 while attending San Diego State University. He taught scuba at SDSU from 1973-75. It was during this time that Pat and Kim became good friends and dive buddies.

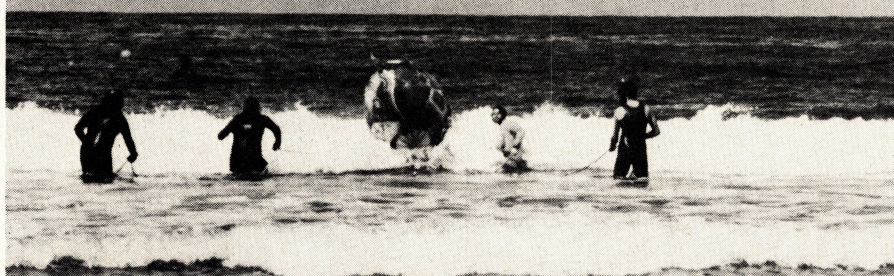
In 1974 Pat was diagnosed as having leukemia, but was told the symptoms were in remission. He continued to dive and purchased a 30 foot ketch on which to live at Shelter Island Marina. In May 1976 Pat underwent a bone marrow transplant in Washington. In January 1977 he returned to his ketch, *Poppy*, and began outfitting her for a two year South Pacific voyage. He was, at this time, misdiagnosed as cured. Suddenly in August 1977, he suffered a relapse and died September 4, 1977.

In 1977 only ten percent of people with leukemia were able to have the disease put into remission. With the research and present knowledge available, over 45 percent of these victims are in remission. Ninety-five percent of leukemia-stricken children are now in remission, with 50 percent totally cured. Ten years ago only 15 percent went into remission! With enough research—and that means money—leukemia could be a disease of the past at the end of this decade.

It was with this information—and the great response to the First Annual Underwater Easter Egg Hunt—that Kim Skaalen, who is also a scuba instructor, continued his efforts. On April 4, 1982 125 divers gathered and participated in the Second Annual Underwater Easter Egg Hunt and retrieved Easter eggs from the bottom of the ocean at La Jolla Shores as some 500 spectators watched from the beach. "Rescued" while floating atop the ocean was a giant Easter egg—which contained a very live, purple Easter Bunny. Over \$3,000 was raised and contributed to the Patrick John Smith Memorial.

The Third Annual Underwater Easter Egg Hunt for the Leukemia Society of America will be held on Palm Sunday, March 27, at La Jolla Shores California. The event will include an underwater Easter egg hunt for scuba divers, and an on-land Easter egg hunt for non-divers and children. Prizes, donated by scuba manufacturers and area dive shops, will

U/W EASTER EGG HUNT



Divers haul a huge, floating "Easter Egg" through the surf. The egg would later produce an "Easter Bunny." The Underwater Easter Egg Hunt raises money to fight leukemia.



TEXT AND PHOTOGRAPHY BY JAMES REDMAN

be awarded by means of a drawing based upon the number of Easter eggs each diver retrieves. A special prize will be given to the person who finds the coveted golden Easter egg.

The Easter Bunny has promised another dramatic entrance—much to the delight of the divers and spectators of previous hunts. National and local television crews will be on hand to record this unusual benefit. Divers from the southwestern United States and Mexico are

expected to participate and contribute to the Patrick John Smith Memorial.

The Underwater Easter Egg Hunt is not a race or a competition, but a relaxing dive to be enjoyed by each buddy team. Afterward the Leukemia Society will provide beer and soda for a no-host barbecue. The San Diego Council of Divers will provide the charcoal and barbecues. The drawing will take place after everyone has eaten.

The registration fee will be \$10, plus

any donation money the entrant has received. Anyone with \$100 or more in donation money will be granted free registration and will be eligible for a prize.

For more information, or for forwarding donations, please contact: Kirsten Munz, Leukemia Society of America, San Diego Chapter, 4535 30th Street, Suite 213, San Diego, CA 92116, (619) 283-6161; or Kim Skaalen, 4423 Brighton Street, San Diego, California 92107; telephone (619) 224-5090.

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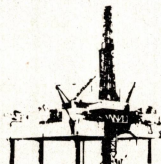
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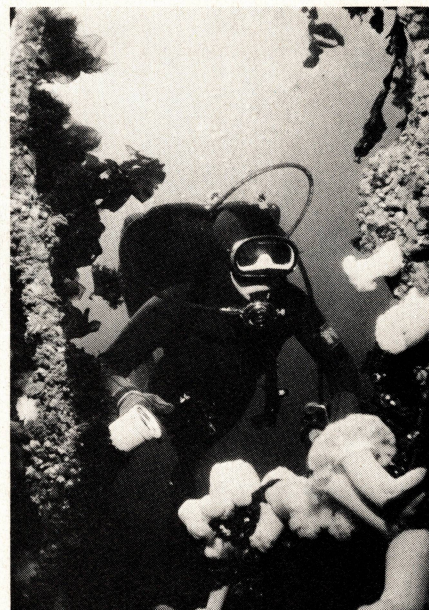
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EDMONDS WRECK

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TEXT AND PHOTOGRAPHY
BY PHILIP S. ELY

Committing ourselves to the chilly embrace of our Northwestern waters, Terry and I slip beneath the surface of Puget Sound. Our world suddenly turns green. I look down. Below us stretches a long, ghostly form; a forest of white *Metridium* anemones clothing a skeleton of rusting steel. This is our objective. We drop down beside it and strike out for the far end—in about 35 feet of water.

Along the way we meet a variety of fishes that grace the surrounding sandy bottom. Black eyed gobies, like marine prairie dogs, live in holes in the sand under pieces of debris. Venturing out to watch the world go by, they can pop back under cover quicker than the eye can follow. Painted greenlings, diminutive cousins of the lingcod, are unintimidated by divers. Scooting saucily about, one chases the end of my close-up focusing wand much the way a cat might chase

the end of a string or stick. Skimming the bottom in intermittent spurts, rock sole pursue their search for bivalve siphons which extend up through the sandy bottom. Alternately shy and curious of intruding divers, they swim toward us from every direction, but ignore the pieces of bait we offer.

A school of striped sea perch finds our bait attractive, however, and they are soon in a frenzy, even nipping Terry's gloves in their excitement. Hovering over a nearby block of cement, a large, solitary pile perch considers our feeding station to be within his territory. He is little interested in food, only in driving out intruders, and he dashes into the middle of them. His efforts are in vain, of course, and comical to us, for he cannot be everywhere at once. When the bait is all gone, the crowd disperses and peace reigns once more. Though we have been here many times, we never tire of the scenery nor of the little dramas continually being played out beneath the surface.

Known to local divers as the Edmonds Wreck, the brooding hulk that looms beside us is actually an old steel dry dock,



Above left: A diver peers into the wreckage, at scores of *Metridium* anemones. Above: A rock sole perches on the sand.

sunk next to the ferry landing at Edmonds, Washington in 1935 to act as a breakwater. It consists of two hulks, about 80 feet apart, known as the North and South Wrecks; remnants of the two bulkheads between which a ship to be dry-docked passed. Today we are diving on the North Wreck.

The flat, sandy bottom of this area slopes gently from shore to deeper waters. Except for pilings and beds of eel grass, there is very little here that offers the kind of shelter or mooring most marine organisms require. Into this otherwise featureless seascape the dry dock settled. As time passed, its rusting steel provided attachment for algae and sedentary invertebrates. These in turn attracted nudibranchs, sea stars, crabs and above all, fish. Though moved several times during World War II, when sections of the dock were salvaged for scrap

(Continued on Page 79)

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THE WRECK LADY

Resurrects the ghosts
of old ships and reveals
their innermost secrets

BY ELLSWORTH BOYD



illustration/ Joe Beserra

She sits there, composed and unpretentious, against a room brimming with *Lloyd's Registers* and maritime memorabilia. She is petite and attractive, radiating a dainty charm; this remarkable lady whom I dub, "The world's foremost authority on shipwrecks."

Jean Haviland blushes and begs, "Please don't say that! I'm not the only one...there are others." I smile, but I don't buy her rebuttal. The proof is in the pudding for this talented chef of shipwrecks who has prepared and served an armada of tidbits to ravenous wreck divers.

She is *SKIN DIVER* Magazine's very own "wreck lady," a brilliant researcher who has received thousands of letters

and phone calls since the article, *No Requiem for a Shipwreck*, appeared 12 years ago (E. Boyd, *SDM* April 1970). Inquiries poured in from everywhere; the United States, Canada, England, Ireland, Germany, France, Indonesia, Australia, Jamaica, the Bahamas, Puerto Rico, Guam, New Guinea, the Panama Canal Zone and Ceylon. Jean answered them all and was seldom stumped, tracing the history of all the sunken vessels, some mysterious, others provocative, but all fascinating to the diver, and of course to the wreck lady.

"In the beginning," Jean says, "I received many inquiries about wrecks in the Great Lakes. Then letters poured in

asking about the losses off North Carolina—mostly World War II tankers, freighters and German submarines. I am surprised at the vast numbers of East Coast wreck divers, many of whom ask about vessels lost off Maryland, Delaware and New Jersey. And, of course, West Coast and Gulf Coast divers have written too, asking for information on their discoveries or seeking knowledge about ships they are trying to find. Letters come from divers all over the world. The only place I haven't received an inquiry from is South America.

"American divers are enthusiastic and one of the most avid I ever encountered is a non-commissioned officer in the Unit-

ed States Army who is obsessed with his search for Napoleon's ship, *L'Orient*. In 1797, on their way to the Battle of the Nile, Napoleon and his troops plundered the Knights of Malta and loaded *L'Orient* with heaps of treasure. But it's possible that the treasure might have been unloaded in Egypt. Records aren't clear about this, so the American diver visited the Egyptian Embassy in Washington, D.C. to gather more information. I had the opportunity to meet this diver at Mariners Museum last year and all he talked about was *L'Orient* and his plans to locate and dive her. He surely has the drive and determination to do it!"

There are many other divers in the United States who are determined too, especially when it concerns the *Republic* (see Wreck Facts next issue). The wreck lady has received scores of letters and calls about the 15,000 ton White Star liner that sank off Nantucket, Massachusetts in 1909, purportedly carrying \$3 million in American \$10 gold pieces in her vaults. A military payroll, the gold pieces were bound for Admiral Sperry's fleet in the Mediterranean. Divers are pursuing another payroll ship, the *Huzar*, sunk in the East River off Hellgate, New York in 1780. Her cargo included pay for the British army. A third treasure ship, the *Debraak*, commands nearly as much attention from Jean as the *Republic* and the *Huzar*. A Dutch ship sailing under a British flag, the 125 foot sloop, *Debraak*, sank off Lewes, Delaware in 1798 and is supposed to have a Spanish treasure aboard of gold, silver and jewels.

"Don't misunderstand me," Jean says. "Not all divers seek treasure ships. Many divers explore a wreck and become curious about her origin, cargo and demise. They delve into the ship's history, often discovering it to be entertaining and dramatic. Divers continue to find new wrecks in Truk Lagoon, for instance, and they want to know all about them." One of the books Jean uses is a government publication, *Japanese War Losses in World War II by All Causes*. Another is in Japanese—*One Hundred Years of Shipwrecks*, a Mitsubishi Shipyard publication that describes all the ships built by this company. (Jean's husband, Ken, a retired Johns Hopkins University professor, reads two foreign languages and has a working knowledge of six others.)

In order to show their appreciation, divers who have published books and papers have given Jean credit lines and copies of their publications. She helped Fred Stonehouse trace wrecks in Lake Superior and he sent her a copy of his book, *Great Wrecks of the Great Lakes*. Another grateful diver, John Broadwater, sent her his book, *Wrecks of Kwajalein*, all about shipwrecks in the South Pacific. Herbert Ward was so enthralled when he

dove the *Cormoran*, a World War I armed merchant raider scuttled off Guam, he wrote a book about it: *Flight of the Cormoran*. Jean was the author's major source for pursuing the remote past of his favorite shipwreck, so he sent her an autographed copy of his book and some underwater photos. He also sent some German coins, a candlestick holder, and a lock and key; all from the wreck.

A grateful diver sent the wreck lady a valuable antique bottle he retrieved from a California wreck, the *Dorothy Wintermote*. Another diver sent a bottle from the *Tarpon*, a coastal passenger ship that foundered off East Pass, Florida in 1937. A burnished brass spike adorns the coffee table in the Haviland living room, engraved with the name of the wreck, *Ventura*, in which it was once embedded. This freighter was demolished off Point Sur, California in 1875. Mike Mesgleski presented Jean with a shiny brass drawer-pull, mounted on velvet and framed in walnut, a souvenir of the *Western World*, a full-rigged English sailing vessel wrecked off Spring Lake, New Jersey in 1853. Jean displays this in her living room, next to some spikes and nails—also mounted on velvet and neatly framed—momentos from the *Ashburn*, a World War I wooden freighter sunk in the Chesapeake Bay in 1923. Dr. Bill Schiebel, noted East Coast wreck diver, personally delivered these to his favorite wreck detective. So did Bob and Bruce Lanham who mounted and framed various artifacts from the *S.S. Lewis*, a passenger ship that went down in 1853 off Duxbury Reef, California.

The most delightful surprise of all came from a diver in North Carolina who sent Jean a deck light from the *City of Richmond*, wrecked off Cape Hatteras. The Havilands first met aboard this very same vessel. Both were passengers on the Old Bay Line steamship cruising from Baltimore to Old Point Comfort, Virginia to attend a convention of the Steamship Historical Society of America at Mariners Museum in Newport News. Jean was having trouble unlocking the door to a stateroom she was sharing with a girlfriend when Ken passed and offered assistance. That was in the autumn of 1949. They were married the following summer and have shared their everlasting enthusiasm for ships and the sea ever since.

"I can't resist," Jean laughs, "adding a humorous sequel to the wreck of the *City of Richmond*. She foundered off Cape Hatteras on her way to the Virgin Islands where she was to be converted into a floating restaurant and ice cream parlor, specializing in an array of fancy soda fountain treats. Can you imagine divers today going down, exploring the wreck and finding nothing but soda fountains?!"

The Havilands merged their collections

when they were married and by adding to them yearly have amassed the best private steam and motor merchant marine collection in the world. "We are probably the best in steam and motor merchant vessels," Ken modestly admits, "but our collection is only fairly good on naval vessels, and just fair on sailing vessels." But to visitors, Ken's "fairly good" looks fantastic in the eight rooms that house thousands of books, photos and file cabinets. The Havilands have seven copies of *Underwriters' Registry for Iron Vessels*—the only private collection in our country. Two museums and the Library of Congress house the others. Jean and Ken own 60,000 actual photographs depicting 41,000 different ships, all meticulously categorized in 66 filing cabinets in Ken's den. In addition, the Havilands have 20,000 ships' pictures and illustrations in their collection. They own shipowners' reprints called "redbooks" and underwriters' "greenbooks," some dating back to 1764. They have 75 volumes of *All the World's Fighting Ships*, by Fred Jane, standard references of the world's navies dating back to 1898. Next to these rests one of the finest, nearly complete sets of *Brassey's Naval Annual* to be found in a private collection.

When helping divers Jean frequently turns to some of the 151 bound volumes of *Lloyd's Register of Shipping*—dating back to 1834—that swell the bookcases in the hallway and living room. Or, she turns to one of the 300 scrapbooks on shipwrecks that she has faithfully cut and pasted since she was nine years old. She still spends about 40 hours weekly, constantly updating them. While Jean maintains her scrapbooks, her husband keeps the voluminous photo file up to date. Ken, a specialist in steam navigation, is a soft-spoken, walking encyclopedia. He quotes from sheer memory the names and dates of ships' launchings and sinkings, including their owners, captains and cargoes. Jean is just as astute when it comes to her favorite wrecks. During casual conversation she will often excuse herself, returning in moments with a scrapbook and a *Lloyd's Register of Shipping* that tells all about the vessel she was just discussing.

Jean researches a vast amount of material for divers, but she is a writer, too. She has contributed to many magazines, particularly *The American Neptune*, a journal of maritime history published by the Peabody Museum, Salem, Massachusetts. (Dr. Haviland is honorary curator of steamship history at the museum and also contributes frequently to their magazine.) Jean's forte is maritime history and her favorite project—the concrete ships of the world wars—took five years to complete. Built during World Wars I and II, these strange looking craft were

the result of shortages in steel plate.

The wreck lady also traced a fleet of 40 unusual looking wooden schooners built for the French government in 1918. Five masted, twin-screw and two funneled, these bizarre but stately coal carriers took Jean many years to locate and chronicle. Two were deliberately destroyed for insurance money, one was beached off Nantuckett in a hurricane, and several were lost in storms. The history of the rest is neatly compiled in a

proclaim foul play, some saying that the captain hijacked his own ship or that the crew blew her up. One newspaper reporter is certain that the *Cyclops* was devoured by some mysterious monster in the Bermuda Triangle. Personally, I don't buy the conjecture that she was a victim of a German U-boat either. The Germans were quick to broadcast and brag about sinking American vessels and no information about the *Cyclops* was uncovered either during or after the war. I think the

Cressy, *Hogue* and *Aboukir*. "In 1914," Jean explains, "Otto Von Weddigen, captain of the submarine *U-9*, became one of the most heralded officers in German naval history when he torpedoed and sank three British cruisers in the North Sea. The *Cressy*, *Hogue* and *Aboukir* were big, black, four funneled cruisers, each 500 feet long. They were majestic and menacing beauties. It's incredible that Von Weddigen was able to sink all three and escape unscathed. The British learned a lesson that day—don't hang around like a sitting duck when a sister ship is hit. A German salvage firm discovered the wreckage and brought up some of the metal, but working in the turbulent North Sea was difficult and dangerous, so most of the wreckage is still there."

The wreck lady has never discovered nor explored a shipwreck, but she and her husband snorkel in the brisk waters off their summer cottage in Friendship, Maine. "One time," Jean says, "Ken and I snorkeled over some old timbers that resembled a ship's keel. I dived down, but found nothing to indicate a wreck. That's the closest I've come to discovering a shipwreck!" Meanwhile, Jean is content to live vicariously, helping others research their intriguing finds.

But why is it so intriguing for her? Why is Jean so fascinated by ships, especially shipwrecks? "To begin with," she says, "my grandfather was a marine surveyor and naval architect, but my real love for ships and the sea started as a child when I sailed to Europe with my mother. We went to England aboard the White Star Line's *Baltic* and returned on the Cunard Line's *Berengaria*. I was nine years old and started saving clippings upon my return. Naturally, disasters get more press than launchings and that's how my interest in wrecks got started and grew to what it is today. There is something ghostly fascinating about shipwrecks. They are beautiful and romantic at launching, then become intriguing and mysterious when wrecked. I've seen many of them before their demise, when they were stately vessels, proudly sailing the seas. Sure, I would love to dive and see them resting peacefully on the bottom. But that's where my diving friends reciprocate. I help them unravel their puzzles and they send me reports, artifacts and photos. Together, we resurrect the ghosts of the old ships and reveal their innermost secrets."

Mrs. Haviland is happy to answer all legitimate questions about shipwrecks if the request is accompanied by a stamped, self-addressed envelope. If you have the name of the vessel, chances are she can help you. If you don't, then give her as much information about the wreck as you can. Her address is: Mrs. E. Kenneth Haviland, 4129 Roland Avenue, Baltimore, Maryland 21211.



Jean and Ken Haviland examine two of the 60,000 ships' photos in their collection. Below: Jean, with one of the Havilands' 151 volumes of *Lloyd's Register of Shipping*.

special folder in the Haviland collection.

Jean's current long-term project is *American Steam Trawlers of the East Coast*, in which she traces the origin and history of this fleet of fishing vessels. In collaboration with Al Barnes of Mariners Museum, she is pursuing the details of each vessel, hoping to eventually track them to their final resting places. Then, with her husband's help, she will locate actual photos of each ship, some at launching and others portrayed at dockside or sailing in the open sea. In the final analysis, some of the trawlers may be accessible to divers while others might have been dismantled and used for scrap. Only time and research will reveal their fate and Jean Haviland is the wreck detective who can do it.

Does Jean harbor any shipwreck fantasies? "Oh yes!" she smiles, her eyes lighting up like a diver who has just discovered a Spanish galleon. "I dream of discovering the *Cyclops*, one of the most mysterious disappearances in maritime history. She was a naval collier, a coal ship, that left Barbados in March, 1918, heading right here to Baltimore. I have clippings in my scrapbooks that tell about her vanishing from the sea. Headlines



photos/Ellsworth Boyd

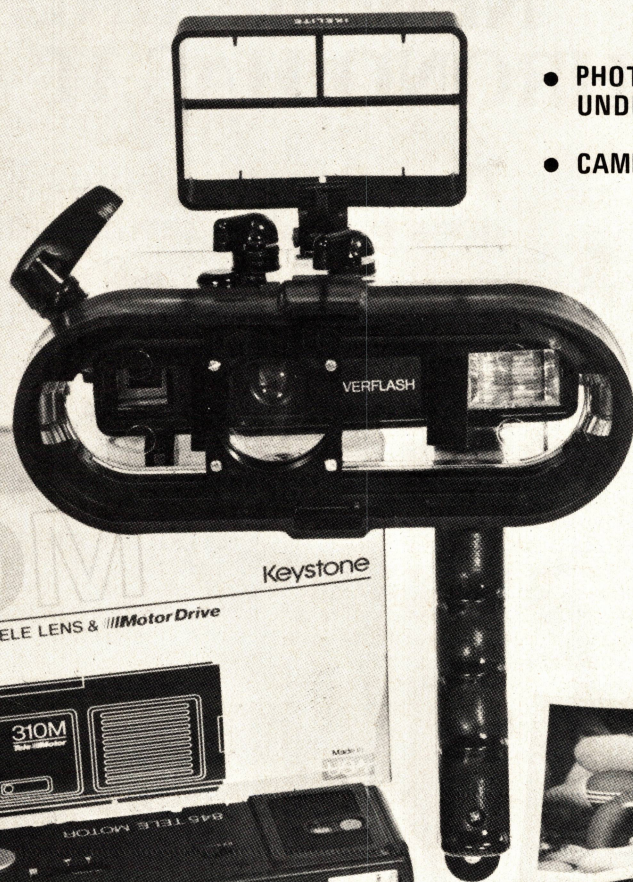
ship was simply lost in a storm.

"I would also like to find the *Waratah*, whose fate was almost identical to the *Cyclops*. The *Waratah*, named for an Australian flower, was an English vessel from Lund's Blue Anchor Line. She left Durban in 1909, returning to England on her second round trip voyage—England to Australia with a stop-off at Africa—and disappeared. The liner with all its passengers and crew just vanished off the coast of Africa. I keep hoping that divers might discover her someday."

The wreck lady fantasizes about finding the *Titanic* and *Lusitania* too, but if she had her druthers she would dive on three ships she has always admired: the

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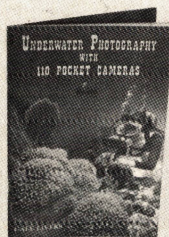
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IKELITE

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- Close-Up Lens & Shade
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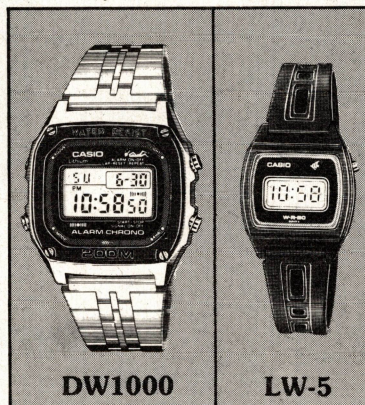
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NIGHT DIVING

TEXT AND PHOTOGRAPHY BY BONNIE J. CARDONE

Night diving can be very exciting. After dark you'll find an entirely different cast of marine characters around underwater. The scavengers, most notably, are often out in the open, looking for supper and socializing. These include crabs, lobsters and snails. Creatures that are hard to approach during the day, some fish for example, may be sleeping or at least sluggish and easier to get close to. Even if you've dived a spot many times by daylight, at night, in the beam of your dive light, it will look different.

CHOOSING A SPOT

Night diving isn't really hard or difficult or dangerous, as long as you pick your site carefully and plan your dive. Don't dive areas with currents, big surf or swift-moving waters: Calm, secluded bays are

best. Pick beaches that will make entries easy. If you're in a small boat, stay close to shore. Avoid deep dives, caves, wrecks and areas that are difficult to dive during the day. Make your small boat easy to find by equipping it with lights on the anchor line both above and below the surface. Have someone remain on the boat while you're diving to make sure it doesn't drift or its lights go out.

EQUIPMENT

In addition to the equipment you use for daylight diving, you should have at least one dive light, a compass and a chemical light. This latter should be taped to your snorkel or tank valve. It will make you visible to your buddy should your underwater light fail and make you easy to see when you're on the surface. Cyalume

chem lights are available for less than \$3 at dive and other retail stores.

You probably wear a knife for daylight diving; wear one at night, too. No, you won't need it to defend yourself, but you may need it to cut fishing line or kelp.

Many BC's come with whistles—if yours doesn't you'd be wise to get one. Attach it securely to your BC inflator hose. It is an effective attention getter on the surface in an emergency.

Choose your light carefully. There are many considerations including size, weight, positive or negative buoyancy, length of burn time, brightness and beam width. I prefer a small, negatively buoyant light. It is easy to carry around and when I set it down it stays put. Some prefer to attach their lights to their weightbelts or use lanyards to keep them around their

wrists. Yet another consideration is rechargeable or disposable batteries. The rechargeables provide a brighter light with a shorter (sometimes only an hour) burn time. The disposables burn longer (usually several hours) but cost more in the long run. Whatever your decision make sure your batteries have enough burn time for the length of your dive with some to spare, whether that means recharging or replacing them.

UNDERWATER NAVIGATION

There are several ways to navigate at night. The best and most accurate of these involves using a compass. You can also use depth (the deeper you are the farther from shore you are likely to be); the ripples on a sandy bottom (they run parallel to shore); the sound of the boat's



Above: Ed Lord and Pete Urquides practice the OK signal. Bottom: Use two aligned shore lights to mark the exit area.

generator (it gets louder as you get closer); and the position of the moon (but if it's directly overhead all it will tell you is which way is up!).

NIGHT DANGERS

There are a few cautions about marine creatures. Sandy areas may harbor rays that will be lying in depressions. Shine your light far enough ahead so you can avoid disturbing them. In some tropical seas moray eels free swim at night. They are not dangerous as long as you don't box them into an area, leaving them no way out. Don't put any part of your body down anywhere without checking the area with your light first: You may be settling down on a spiny sea urchin or a fish with poisonous spines! You may want to reconsider making a dive near a sea lion or seal rookery. A dive bombing sea lion totally unnerved one of my dive buddies. It was just curious, of course, but its zooming in and out and all around in the dark was spooky. Lucky, I was taking macro photos and altogether oblivious to

what was going on.

Before I made my first night dive in California waters, I worried about the kelp. Well, I needn't have. My dive light allowed me plenty of light to avoid strands underwater and it was easy to find a clearing in which to surface. If snorkeling over kelp during the day is no problem for you, it will be no more difficult at night.

MAKING THE DIVE

A night dive is easier if you are familiar with the site because you've dived it in the daylight. Although the area won't look the same in the dark, you won't have any unpleasant surprises and you will feel more comfortable.

Before you go in the water, check your gear and your buddy's gear to make sure you have everything you need and know how everything works. Practice the two light signals you'll use. A dive light moved in a circle means everything is okay. A dive light moved up and down rapidly means something is wrong. Agree on what to do if one of you gives the other this second signal. Also, remember that shining the light in your buddy's eyes will momentarily blind him/her. The light needs to be placed in such a way that your buddy can see what you're doing.

If you're making your night dive from a boat, check the surface of the water at the entry area before you jump or roll off into it. There may be debris floating there that you'd rather avoid.

If you are beach diving, leave lights on the shore, and someone to tend them, so you can find your way back. Amber colored lights are recommended, to prevent confusion with marine navigational aids which are white, red or green. If you must find your way back to exactly the same spot where you made your entry, align two lights or align one light with a permanent shore light.

Ascend or descend along the anchor line or a line from a dive float. It is surprisingly reassuring for a novice night diver to have ahold of some link to the surface. This also helps control your ascent or descent and provides a way to acclimate

yourselves to the water. Stop when you're near the bottom and, with a leg or arm wrapped around the line, check your watch, depth and pressure gauges. Turn off your lights, allow your eyes to adjust to the dark and look around. You'll probably be surprised at how well you see.

Lights make it easier to maintain contact with your buddy because they are visible for quite some distance underwater, especially if the bottom is flat and unobstructed. Buddies of underwater photographers will have a hard time losing them because the light of even the tiniest strobe is quite brilliant. These flashes can often be seen from the surface even when the visibility is poor and the photographer is 30 to 40 feet deep.

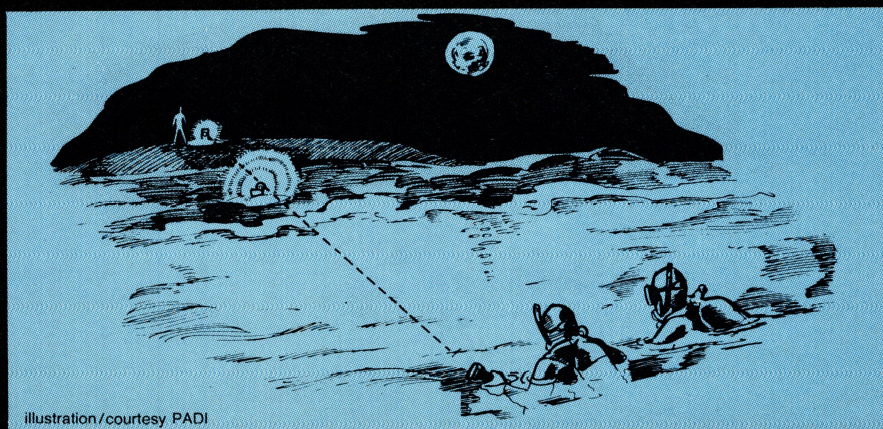
OTHER CONSIDERATIONS

Alcohol is a no-no before a night dive so if you're planning one forgo the pre or apres dinner cocktail, beer or wine. Also, you'll be more comfortable if you avoid greasy foods and eat lightly. You can always have a snack later.

Even if your night dive is going to be made in the tropics, anticipate that you may be chilled and bring something warm to wear afterward. Cold waters demand even warmer after-dive clothes, a thermos of something warm and a protected area (someone's van or a tent, etc.) to dress in to prevent further chilling.

CONCLUSION

Once you have a couple of successful night dives under your weightbelt you'll be able to relax and enjoy the experience. It's really a lot of fun. Test your knowledge of the subject with this month's Scuba Quiz. And, if you really want to get off to a good start, consider taking a course in night diving from one of the national scuba certification agencies. For more information contact: YMCA, P.O. Box 1547, Key West, FL 33040; SSI, 2619 Canton Court, Ft. Collins, CO 80525; PADI, 1243 E. Warner Ave., Santa Ana, CA 92705; NAUI, Box 14650, 4650 Arrow Highway, Montclair, CA 91763; or NASDS, 641 West Willow Street, Long Beach, CA 90806. >>>



illustration/courtesy PADI

The SE35 Stingray is a medium weight speargun which features two 7/16 inch rubber slings with room for a third; a 3/8 x 35 inch cadmium plated steel shaft; double barb speartip; hollow butt stock and anodized aluminum tube construction. It is one of five Dacor Stringrays which range in size from a 24 inch light-weight to a 47 inch three bander.

The 46 inch body of the SE35 is made from two segments of one and one-quarter inch aluminum tubing. The longest section, which separates the muzzle from the trigger housing, is O-ring sealed at both ends, creating an air chamber for buoyancy underwater. The second segment, attached behind the trigger mechanism, doubles as the butt stock for easier band stretching and as a storage chamber. A spearfisherman can stow his speartip inside the butt stock while traveling or put weights in it for balance.

A hollow aluminum shell forms the handgrip and contains the trigger mechanism. Although it is tempting to separate the two halves of the grip to clean and oil the mechanism, it is not recommended unless care is taken not to lose the trigger spring, which may be jettisoned. Further-

more, the internal components are made of corrosion resistant stainless steel. The safety is behind the trigger where it can be pushed from side-to-side with the thumb and index finger. Status of the safety is indicated by a small label showing "push safety on." The mechanical shock cord release is on the underside of the gun in front of the trigger and out of the way for either right or left handers. Sighting ribs are on top of the muzzle and the handle.

The plastic muzzle completely encircles the shaft. Two slings are provided with the gun, but the slot in the muzzle is long enough for three. Vern Pedersen of Dacor, a champion spearfisherman, remarked that the good spearfisherman will choose his own slings depending on the prey. Pedersen finds two bands adequate for taking 20 pound carp in the Great Lakes, but often uses three during excursions to the Caribbean.

To load the SE35 Stingray the safety must be off. The back end of the spear is then slipped through the muzzle, under the slings, along the top of the gun and pushed into the trigger housing. After engaging the safety the rubber slings are stretched 15-18 inches along the top of the shaft to any of three notches. The ten foot shock cord is then wrapped twice around the mechanical release and muzzle loop.

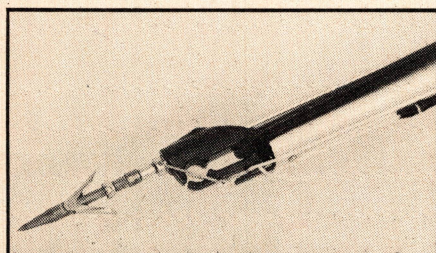
Open water testing took place in a rocky area under 75 feet of water off La Jolla, California. Both male and female

divers in our group found the slings relatively easy to pull. Triggering was smooth. We found the distance traveled by the untethered spearshaft comparable to other guns of similar size. I was unable to cause a prefire by dragging the gun over the rocks and striking the handle from side-to-side. Buoyancy was negative with the spear in position on the gun, but the body floated upward after discharging the shaft. The silver color of the body was helpful for finding the gun when it floated at the edge of visibility.

An interesting accessory for the SE35 is the Stingray Balance Grip. It attaches to the barrel between the trigger and muzzle and provides a handle for the nontrigger hand to steady the gun for better aiming. Replacement speartips require a 6 mm thread.

Although the SE35 is extremely simple in design and should not require service, a limited one year warranty is provided. Repairs can be made by returning the gun to Dacor in Northfield, Illinois or taking it to a local Dacor dealer.

The suggested retail price for the Dacor SE35 Stingray is \$99. The gun is available from all Dacor dealers. 



The slot in the muzzle of the SE35 is large enough for three bands. An aluminum shell forms the handgrip, and the butt doubles as a storage tube.

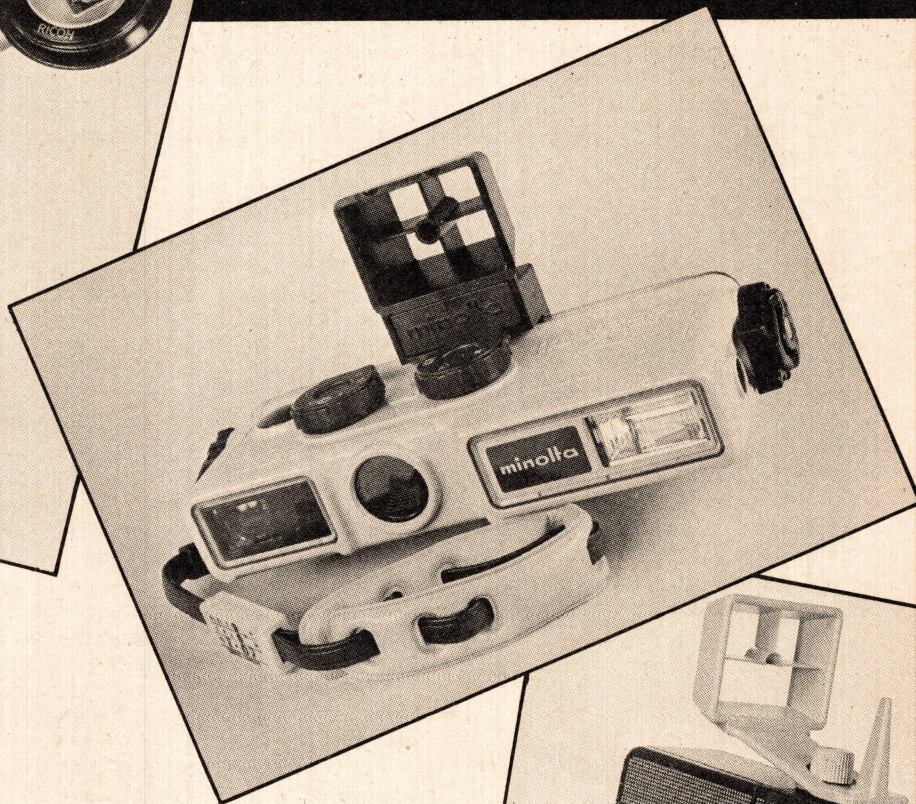
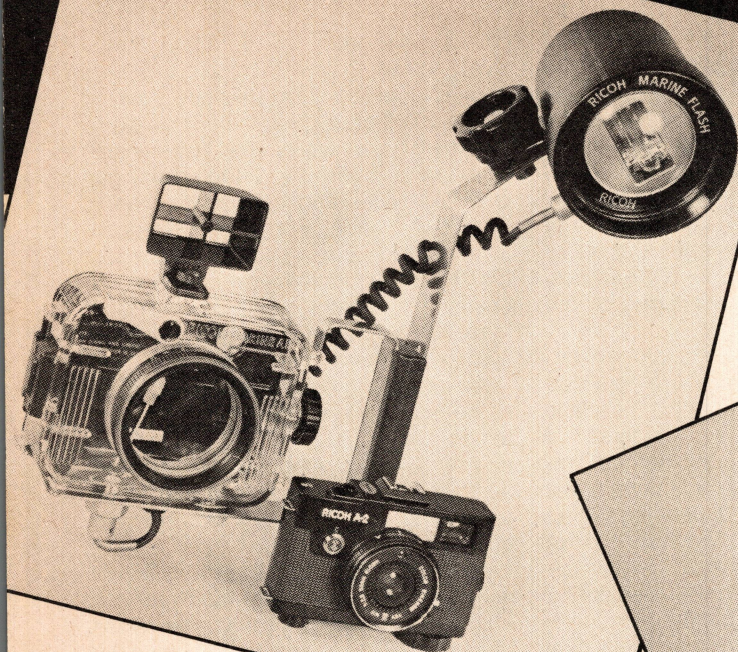


**TEXT AND PHOTOGRAPHY
BY FRED FISCHER**

Dacor's
medium
weight
speargun

**the SE35
Stingray**

A wide variety of underwater camera systems are available—from snapshot format through housed 35 mm units to movie cameras. A few of these are, from left to right: Ricoh A-2 camera with Marine AD housing and Marine Flash, Minolta Weathermatic-A, Eumig Nautica Super-8 movie camera, Cosina Marina and Seamaster-ST strobe, Konica C35AF in an Ikelite housing, and Nikonos IV-A with large accessory viewfinder.



Choosing an U/W camera doesn't have to be a confusing task. It is simply a matter of matching your needs with camera features. Choices range from simple snapshot cameras to complex cameras for professionals, and you must determine where you fit within this range.

If you want snapshots for the family album, a simple 110 camera might be your best choice. And, to combine ease of operation with the larger 35 mm film size, consider a housed 35 mm camera with simplified, automated controls. For maximum versatility, a Nikonos allows you to build upon your system. And, if you want the best quality close-ups possible, a housed 35 mm SLR or large format camera might be necessary.

110 CAMERAS

Amphibious, 110 cameras combine simplicity with small size and light weight, for a relatively low price. The three we've tried are the Hanimex 110 MF Amphibi-an, Minolta Weathermatic-A and the Sea & Sea Pocket Marine. Each of these has a built-in strobe.

The Hanimex MF has motorized film advance and an automatic exposure control with symbols for sunny, cloudy and flash. The film speed (ASA 100 and 400, only) is set automatically when a film cartridge is inserted into the camera. If there is insufficient light for an exposure in the sunny or cloudy modes, a red warning light appears in the viewfinder when the shutter release is partially depressed. Then, you set the control for the flash

symbol to turn on the strobe. The only way to vary the amount of strobe light striking the subject is to move closer to or further from the subject. The 20 mm fixed focus lens is set for three feet to infinity and a close-up attachment is available for a picture of about 2 x 3 inches, five inches from the camera. A plug on the rear lid covers a port into which an accessory strobe connector can be attached. The depth limit is 150 feet.

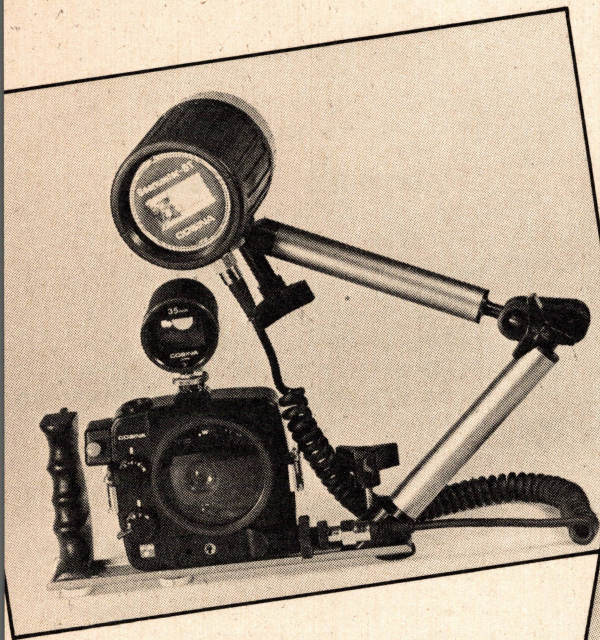
The Weathermatic-A has two large control knobs on top for focus and exposure. The focus control has five symbols for three feet to infinity, and the exposure control has settings for sunny, cloudy and flash, with the usual warning light in the viewfinder. When set for flash, the shutter speed is 1/200 second. And, while the built-in strobe worked fine in clear water, backscatter would be a problem in turbid water. The film speed is automatically set, from ASA 64 to 100, when the cartridge is inserted into the camera. The Weathermatic-A is great for topside shots or for swimmers or snorkelers, but its 15 foot maximum depth limits its usefulness for scuba divers.

The Sea & Sea Pocket Marine has virtually the same configuration, 150 foot depth limit, autowinder, 20 mm lens and close-up attachment as the Hanimex MF, but it has manual exposure control with an aperture range from f4 to f16. Although manual control isn't as easy to use as semi-automatic, we believe that manual is best when you use the accessory YS 20 strobe. Because the strobe isn't built into the camera, you can move it around to change lighting angles. And, for underwater photographer at work

HOW TO CHOOSE AN UNDERWATER

CAMERA

TEXT AND PHOTOGRAPHY BY JIM AND CATHY CHURCH



shots, it has a built-in slave sensor.

If you already own a suitable 110 camera, we recommend Gale Liver's book, *Underwater Photography with 110 Cameras* (\$4.95). The book, and housings for a wide variety of 110 cameras, are available from Ikelite. Their latest 110 housings have a close-up lens attachment.

We recommend 110 cameras if you want to take snapshots with a minimum of fuss and frustration. But we must point out that the tiny negative size (about 14 x 17 millimeters) is best for small 3 1/2 x 4 1/2 inch color prints, and not for big enlargements. Generally, a 110 camera with its normal 20 mm lens is good for head and shoulder diver pictures, fish portraits and close-ups if a close-up lens is available.

Don't be confused here! A 20 mm lens for a 35 mm camera covers a much wider picture area, and is called a wide-angle lens. But, regardless of what you may read elsewhere, a 20 mm lens on a 110 camera covers a much smaller picture area. It is considered a normal lens.

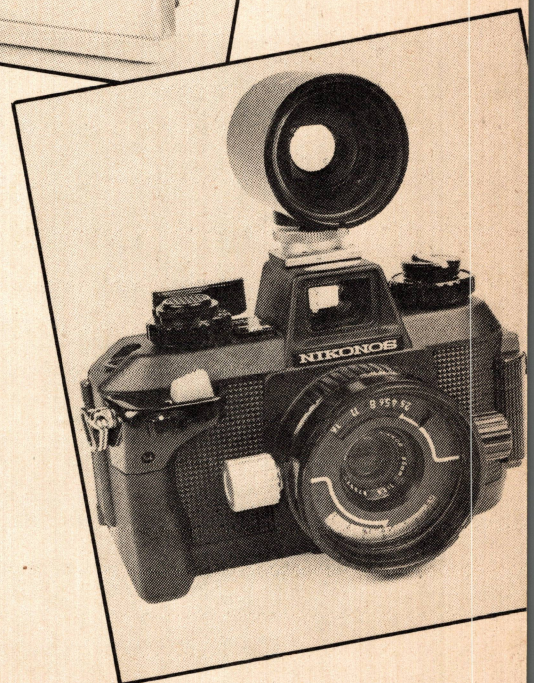
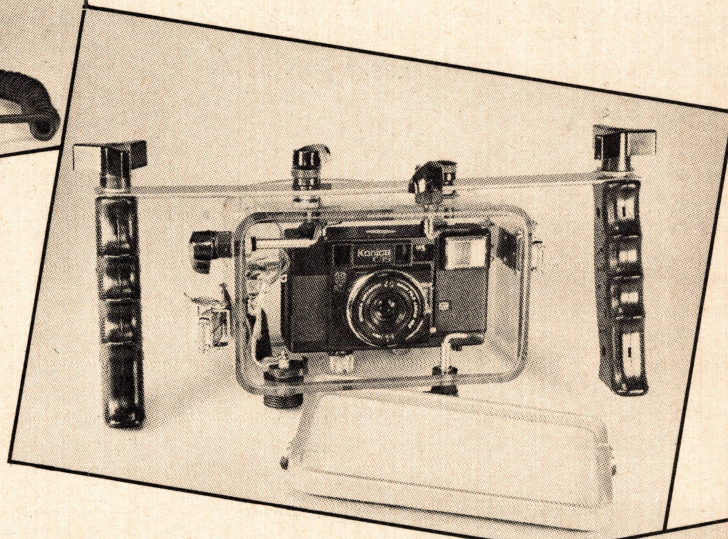
35 mm CAMERAS

The 35 mm cameras are the most popular for U/W photography because they combine a commonly-used film format with reasonably-sized cameras and housings. The 24 x 36 mm negative is

large enough for quality enlargements and most projectors are designed for 35 mm color slides.

Simplified 35 mm cameras offer such features as automatic exposure controls and autowinders for ease of operation, as well as manually controlled shutter speeds and apertures for use with strobes. These cameras usually have a non-interchangeable 35 mm lens that focuses down to three feet. Close-up attachments may be available. Two good examples are the Ricoh AD-1 and Cosina Marina. Housings, sportfinders and strobes are available for these cameras.

Cameras with auto-focus systems that work optically (such as that of the Konica C35AF2), rather than by an echo system, will work through a flat housing port. However, the sensing area (which is usually marked in the center of the viewfinder) must see the subject and detect con-



trast. If, for example, you are photographing a fish, and the sensing area only sees the midwater background, it may set the focus for either minimum distance or infinity.

The major disadvantages of simplified 35 mm cameras are that they (1) don't have SLR viewfinding and focusing, and (2) don't have interchangeable lenses. Not having a wide-angle lens or adapter is an important disadvantage underwater because you can't use long camera-to-subject distances to photograph large subjects as you would above water. Also (3), check the strobe synchronization specifications. We believe that synchronization at less than 1/60 second is too slow for sharp pictures at distances of about three or more feet.

A 35 mm SLR (single-lens reflex) that accepts interchangeable lenses is a better choice if you want a more versatile camera system. But the size of the viewfinder is, in our opinion, critical! A small viewfinder is difficult to see when the camera is housed and your face is behind a mask. Therefore, we recommend SLR's with oversized viewfinders such as the Nikon F, F2 or F3 with the DA-1 Sportfinder, the Canon F-1 with the Actionfinder and the Pentax with the FC-1 Action Eyepiece. However, some camera housings have magnifying eyepieces to help you use smaller viewfinders.

NIKONOS CAMERAS

The amphibious Nikonos 35 mm is probably the most widely-used camera for U/W photography. Four interchangeable lenses—80, 35, 28 and 15 mm—are available from Nikon, as well as a close-up kit and electronic flash unit. In addition,

dozens of accessories—close-up attachments, extension tubes, flash units, viewfinders, etc.—are available from other companies, large and small.

The latest model, the Nikonos IV-A, has a built-in aperture-preferred automatic exposure control for sunlight exposures, and synchronizes with strobes at 1/90 second. Earlier models didn't have the automatic exposure control and synchronized at 1/60 second.

While the Nikonos features versatility and ease of operation, it is a viewfinder camera. Many serious U/W photographers prefer a housed SLR for more precise viewfinding and focusing.

LARGE FORMAT CAMERAS

If you want wall-sized murals, or extremely fine-grained magazine reproduction, film formats larger than 35 mm will do a better job. Several cameras feature the 2 1/4 x 2 1/4 inch (120 roll film) format and the Pentax 6 x 7 camera produces a 2 1/4 x 2 3/4 inch negative on 120 or 220 roll film. With large format cameras, however, find out at what shutter speed(s) the camera will synchronize with strobe. The Pentax 6 x 7 synchronizes with a strobe at 1/30 second; thus, flashbulbs are needed for faster synchronization.

MOVIE CAMERAS

The most versatile Super-8 U/W movie camera, in our opinion, is the amphibious Eumig Nautica. It has a 9-30 mm zoom lens and a 5.3 mm wide-angle adapter; both SLR viewfinding and an accessory sportfinder; and automatic exposure control with a one-stop backlight correction switch. Standard models run at 18 fps and modified models run at 24 fps.

If you decide to house a movie camera, keep these points in mind: (1) The standard 8 to 12 mm lenses furnished with Super-8 cameras are not wide-angle. They are best for filming divers from the waist up. Large picture areas, showing one or more entire divers, are usually best in silhouette because long camera-to-subject distances lose fine details. (2) Many inexpensive movie cameras have fixed focus lenses that may not allow you to work as close as you wish. Read the minimum focus specifications carefully. (3) What close-up lenses can be used, and will they fit inside the housing?

HOUSING A CAMERA

Camera housings are sometimes available from the camera manufacturer. As examples, the Canon Marine Capsule A is available for Canon AT-1, AE-1 and AT-1 with Power Winder A. Hasselblad has housings for some Hasselblad cameras, and Pentax has a housing for the Pentax 6 x 7. And, for Super-8, Fuji has the Marine-8 Casing for the Fujica P2 camera.

If the manufacturer can't provide a housing, Ikelite can house virtually any camera. There are several smaller housing manufacturers, some specializing in more expensive high-quality housings, but such companies enter and leave the market frequently. This turnover is probably owing to the high costs of limited production rather than lack of quality.

The Oceanic USA aluminum Hydro 35 housing is a popular choice for the older model Canon F1, Nikon F or F2 with or without motor drive, and the Nikon F3 without motor drive. Oceanic can also construct custom housings for most cameras, including the Arriflex 16 mm sys-

MANUFACTURERS AND DISTRIBUTORS OF U/W PHOTO GEAR

Aqua-Craft (\$1 for catalog) 7992 Miramar Rd., San Diego, CA 92126

Aqua Vision Systems Red'd (housing for Nikon F3, w/motor drive) Box 1097, Postal Station Pointe Claire, Quebec, Canada H9S 4H9

Berkey Marketing Companies (Konica C35AF2) 25-20 Brooklyn-Queens Expressway West, Woodside, NY 11377

BNA Photo (Hasselblad cameras, housing) 55 Cambridge Pkwy., Cambridge, Massachusetts 02142

Canon U.S.A. Inc. (Marine Capsule A) One Canon Plaza, Lake Success, Long Island, NY 11042

Cosina America, Inc. (Cosina camera, housing and strobe) 3669 W. 240th Street, Torrance, CA 90505

Creative Whale (\$1 for catalog, wide variety of photo gear) 28 W. 285 Aurora Rd., Warrenville, IL 60555

Dacor (\$2 for diver's kit and catalog) 161 Northfield Rd., Northfield, IL 60093

Eumig U.S.A., Inc. (Eumig Nautica) Lake Success Business Park, 225 Community Dr., Great Neck, NY 11020

Fuji Photo Film Co. (Fujica P2 camera & Marine-8 P2 Case) 350 Fifth Ave., New York, NY 10001

Glenn Beall Industries (Sekonic brackets, accessories) 887 South Route 21, Gurnee, IL 60031

Hanimex U.S.A. Inc. (Hanimex MF) 1801 Touhy Ave., Elk Grove Village, Illinois 60007

Helix (\$1 for catalog, wide variety of photo gear including Sekonic and Hanimex) 325 West Huron Street, Chicago, Illinois 60610

Ikelite (housings, strobes, Sekonic light meters, etc., \$1 for catalog) P.O. Box 88100, Indianapolis, IN 46208

Minolta Corp. (Weathermatic-A) 101

Williams Dr., Ramsey, NJ 07446

Nikon, Inc. (Nikon, Nikonos, SB-101, lenses) 623 Stewart Ave., Garden City, New York 11530

Oceanic, U.S.A. (housings, strobes, etc., \$3.50 for catalog) 14275 Catalina St., San Leandro, CA 94577

Pentax Corp. (Pentax 6 x 7 Marine Housing) 35 Iverness Dr. East, Englewood, CO 80112

Ricoh of America, Inc., (Ricoh AD-1) Camera Division, 20 Gloria Lane, Fairfield, NJ 07006

Sea & Sea Products (housings, strobes, etc., \$1 for complete catalog, individual product brochures free) 1334 S.E. 17th St., Ft. Lauderdale, FL 33316

Tussey U/W Systems (housings) 7118 Foothill Blvd., Tujunga, CA 91042

Underwater Kinetics (movie lights) 7052 Convo Court, San Diego, California 92111

tem. Aluminum housings are also available from Sea & Sea and Tussey for some SLR cameras.

When deciding to house a particular camera, get answers to these questions: (1) Can you see the viewfinder satisfactorily? In many cases, an accessory sportfinder can be attached to the housing. Also, some housings for SLR's have built-in magnifiers to help you see the viewfinder screen. (2) Can you work all the necessary camera controls comfortably underwater? (3) Does the housing have good balance underwater? (4) Are adjustable strobe or movie light arms and brackets available? (5) How easy is it to change film? If possible, ask if you can try the housing in a pool before purchase. If not, try to talk to someone who has used one underwater.

Most camera housing bodies are made from either metal or plastic. Metal housings are usually heavier in air, more prone to corrosion and cost more, but often feature better balance U/W and ease of operation. Plastic housings have improved markedly in recent years but if the housing has molded control gears the controls won't operate as smoothly as machined gears.

EXPOSURE METERS

An exposure meter measures the amount of light available for taking a picture. Exposure meters built into the camera give you either fully or semi-automatic exposure control. The first control automatically selects the correct exposure setting. The semi-automatic usually gives you a display in the camera viewfinder that you use to manually set the f stop. You must, in most cases, set a dial on the camera for the ASA film speed used. With 110 cameras and most 8 mm movie film cartridges, the speed is usually set by a notch in the film cartridge.

If you have a camera without a built-in metering system, or if the system is shut off when strobe is used (as with the Nikonos IV-A), or if the meter doesn't tell you the f stop selected, we recommend a separate meter. Direct-reading, amphibious meters such as the Sekonic Marine and Dacor DLM, are our favorites. You preset the meter for the ASA film speed and shutter speed, point the meter at your subject, read the metered f stop and then manually set this f stop.

Housed, indirect-reading exposure meters aren't as easy to use. You set the meter for the ASA film speed, aim the meter at your subject, and note the position of a needle on a scale. Then, you must align a second needle with the first needle and read the f stop.

Purchase a meter mount for your accessory meter—don't allow it to float above you on a cord, or dangle below on a chain. Oceanic, Aqua-Craft, Glenn Beall and Sea & Sea can supply meter mounts for the Sekonic Marine meter. 

GLOSSARY

Amphibious Camera: A camera that needs no special housing for U/W photography. All ports, lids and control rods are O-ring sealed.

ASA Film Speed (ASA /ISO): A number referring to a film's relative sensitivity to light. This number can be used with an exposure meter to determine camera settings for aperture and shutter speed, and apertures with electronic flash calculator dials. Each time the ASA film speed is doubled, half as much light is needed for a proper exposure. As examples, Fuji-chrome 100 has an ASA film speed of 100, and Ektachrome 200 has an ASA film speed of 200. Thus, you could close the aperture by one f stop, or halve the shutter speed, when changing from Fuji-chrome 100 to Ektachrome 200.

Aperture: The opening which regulates the amount of light passing through the camera lens (see f stop).

Aperture-Preferred Automatic Exposure Control: The automatic exposure control is preset for the aperture (f stop) preferred, and only the shutter speed changes to regulate the amount of light reaching the film.

Autowinder (a motorized film advance or power winder): An electrical or spring-driven motor that automatically advances the film after the shutter is triggered. Note: Autowinders are sometimes confused with motor drive. With motor drive, the shutter can also be triggered automatically for fast action.

Backscatter: Light from a flash illuminates suspended particles in the water. When this light is reflected toward the camera lens, the particles appear as tiny bright specks in the picture. These specks are called backscatter, or snow.

Close-Up Attachment (supplementary close-up lens): A close-up lens that fits over the prime (regular) camera lens so you can take pictures at a closer distance than with the camera lens alone. Some close-up attachments have wands or framers for aiming the camera and indicating distance and picture area.

Depth of Field: The area between the nearest and farthest subjects that will be in acceptably sharp focus in your picture. The smaller the aperture (the higher the f number), and/or the greater the picture area, the greater the depth of field.

Electronic Flash (strobe or flash): An electrical light source that emits a brief burst of light. Electricity from a battery or wall outlet is stored in a capacitor and is used to energize a small amount of gas in a glass flashtube to produce the light.

Exposure: The amount of light that is allowed to strike the film. Exposure is regulated by aperture and shutter speed.

Exposure Meter (light meter): A meter that indicates the correct aperture and shutter speed combination for a proper exposure on the film used.

Fixed Focus: The focused distance of the lens is preset and can't be changed.

F Number: (see f stop).

Focus: (1) The sharpness of the image on the film. (2) Adjusting the distance setting of the lens so the subject will be sharp on film. The focus (distance) is usually set manually, and a scale shows the focused distance in feet, meters or both. Depth of field indicators also show the near and far limits of the depth of field on the scale.

F Stop: A number (sometimes called an f number) referring to the relative diameter of the aperture. The higher the number (such as f16), the smaller the aperture. The lower the number (such as f4), the wider the aperture. Examples of consecutive f stops are: f2.5, f4, f5.6, f8, f11, f16 and f22. Each consecutively higher-numbered stop admits half as much light as the previously numbered stop, for example, f5.6 admits half as much light as f4.

Lenses, Interchangeable: Lenses that can easily be removed or reattached to the camera body.

Normal Lens: A lens that photographs a picture area of about 1.5 x 2.25 feet at a distance of three feet. A wide-angle lens covers a much greater area; a telephoto lens covers a much smaller area.

Shutter Speed: The amount of time the camera shutter exposes the film to light. Examples of consecutive shutter speeds are: 1/30, 1/60, 1/125 and 1/250 of a second. Each time the shutter speed is halved, half as much light reaches the film.

Single-Lens Reflex (SLR): A camera with a movable mirror and a series of prisms that allow you to see the subject through the camera lens. This allows accurate focusing because you can see the image sharpen as you operate the focus (distance) control.

Synchronization: The timing between the shutter opening and the burst of light from a strobe. Proper synchronization occurs when the strobe flashes at the moment the shutter is completely opened or has uncovered the film. Depending on the design of the shutter, synchronization may not occur at high shutter speeds.

Viewfinder Camera: The camera's viewfinder is used only for aiming the camera, and not for focusing of range-finding. Exposure control lights and symbols for focused distance, however, may appear in some viewfinders.

THE INFLATABLES



The Metzeler Juca

This Inflated Floor Ultra Light Really Climbs Up On A Plane In a Hurry

TEXT AND PHOTOGRAPHY BY ERIC HANAUER

Sometimes a writer has to eat his words. A couple of years ago I stated on these pages that any inflatable worth consideration as a dive boat needed floorboards and a keel. If it wasn't a sportboat, it wasn't a dive boat.

Boats without hard floors are generally classified as dinghies or yacht tenders, accept only small engines and won't plane. The Metzeler Juca has an inflatable floor and no keel, but it made me reevaluate my definition of a dive boat. The manufacturer classifies the Juca as a tender. However, this versatile craft will plane carrying four passengers with a 16 horsepower engine. It can be rowed in whitewater excursions, or can handle like a sailboat with the optional sailing rig. At a weight of under 75 pounds without the engine, it is the lightest boat SKIN DIVER

has tested so far in our series.

The Juca is a product of one of Europe's largest conglomerates, the Bayer Company. Yes, they are the folks who brought you aspirin. The German equivalent of DuPont, they are the 23rd largest corporation in the world. The Metzeler division makes tires. For over 20 years it has also put out a very complete line of inflatable boats, from tiny yacht tenders to ski boats and giant river runners. These have developed a reputation for quality construction and innovative, if unconventional, design features.

All Metzeler boats share a few common characteristics. Their color is bright yellow/orange for visibility. The base fabric is 1100 denier Trevira, coated with neoprene and what Metzeler calls Elastomere. What, no Hypalon? Well, Hypa-

lon is a registered trademark of DuPont and Bayer didn't want to use a competitor's product. Therefore, they made their own version. It has the same characteristics as Hypalon in terms of resistance to sunlight and ozone.

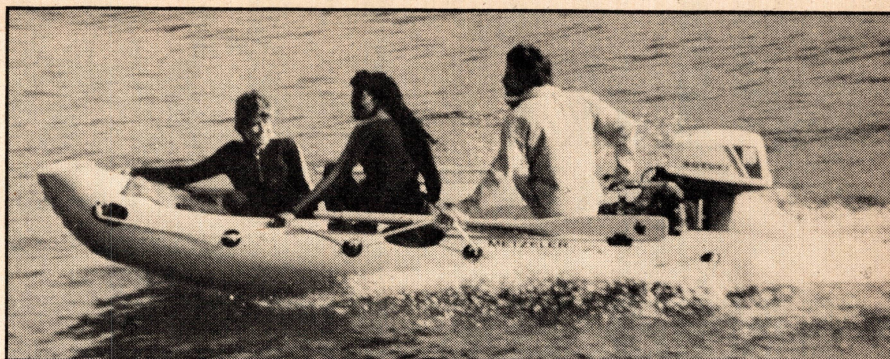
The seams are butted instead of lapped as in most boats. To prevent air loss owing to a wicking effect, all seams are backed by interior reinforcing strips. In the past, the seams were left standing up, which gave the boat a rough, unfinished look. Now they are folded over and glued, then the entire seam is hot galvanized. The result is a four layer seam, which is strong and airtight. All seams along the pontoon run longitudinally for extra rigidity.

Rigidity is important in the case of the Juca, because of the lack of a wood or

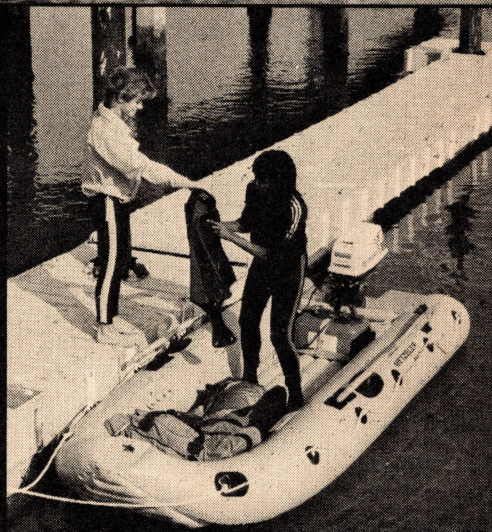
aluminum floor. The inflatable floor consists of a series of longitudinal tubes which are filled to 4.2 psi through a common valve. High inflation pressure results in a floor which feels solid, is stable when standing up, and most important, provides good handling characteristics. Without floorboards, the onerous task of fitting them in place is not a part of boat assembly, something no inflatable owner will miss. He will also be spared the sanding and varnishing needed to take care of wood boards. And, the extra weight won't be missed either. At 74 pounds, the Juca is easy to handle and carry. All the components with the exception of the transom can be stored compactly in one bag.

The transom design is another feature which sets the Juca apart from other inflatable boats. Unless you are using a motor or a sailing rig, the wooden transom can be left home because the actual transom is inflatable. Of course, divers usually use a motor, so the wood transom is attached by means of four stainless steel bolts. Its only function is to serve as a motor mount. Behind the transom are extensions of the floor tubes which serve as inflatable trim tabs. An integral part of the Juca's hull design, they catch and channel the turbulence of the prop, providing a lift effect for planing.

I was a bit skeptical when Metzeler's West Coast representative, Marc Loope-sko, told me this funny looking boat would plane with four persons aboard powered by a 15 horsepower engine. But Metzeler's Elefant had been a good performer in an earlier test (SDM July, 1982)



The Metzeler Juca has an inflatable floor and no keel, and is constructed of Trevira fabric coated with neoprene and Elastomere. In spite of its small size, the Juca will carry three divers with full gear, planing with a 16 horsepower outboard. At 64 pounds, minus transom, the inflatable is easy to carry and can be stored compactly in one bag. Standard equipment includes: oars, two wooden seats, drain plugs at the base of the transom, gas tank pad and boat polish.



METZELER JUCA

Overall length.....	13'0"
Overall width.....	4'9"
Interior length.....	9'4"
Interior width.....	2'2"
Weight.....	64 lbs. w/o wood transom
Floor.....	Inflatable
Keel.....	None
Material.....	Trevira/neoprene/Elastomere
Chambers.....	Two, plus floor and transom
Payload.....	1100 lbs.
Capacity.....	4 persons/3 divers
Maximum hp.....	16
Color.....	Yellow/orange
Price.....	\$1,395

so I had an open mind. We loaded the boat at Newport Harbor with four persons and one set of dive gear, then set out for the ocean.

When I opened the throttle, the boat tried valiantly to get up on a plane, but the engine cavitated and couldn't supply that final push. The engine angle was adjusted inward to the final notch, and this time it did the job with power to spare. Planing in the Juca is an adventure. It feels as if you are really flying. Because of the light weight, it bounces on the swells, so interior grab handles would be a welcome addition. The pontoons project below the floor tubes, resulting in a semi-catamaran effect. As a result it steers true, but exhibits some sideslip on sharp turns. With the 16 horsepower Suzuki, the Juca could easily plane with three divers, maybe even four, and full ocean gear. The limiting factor is interior space. It is pretty narrow, although it increases toward the bow owing to tube taper.

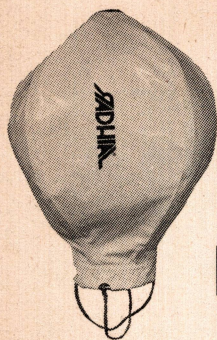
The multi channel hull design also results in good tracking characteristics when the Juca is being towed. It would be an excellent tender for a sailboat, then double as a dive boat when the mother

ship is anchored. Because of its compact storage, the owner has the option of keeping it packed during the voyage.

Inflation is done by means of a double action hand pump, made entirely of plastic and noncorrosive materials. It pumps air on both the upstroke and downstroke and features a built in pressure gauge to tell you when the recommended pressure of 4.2 psi has been reached. When it's time to pack, the hose is adjusted and the pump sucks air out of the boat. This feature makes sense to anyone who has ever sat on a rolled boat trying to get that last bit of air out.

Standard equipment on the Juca includes oars, two wooden seats, drain plugs at the base of the transom and a gas tank pad and strap. A repair kit and boat polish are also standard. Among the available options are a sailing rig, Bimini top, boat cover and beach trailer.

In summary, the Metzeler Juca is a lightweight inflatable boat for two to three divers, with some unconventional features. If easy assembly and compact storage are major priorities, give this one a good look. It sells for \$1,395 at your Metzeler dealer.



AMERICAN RADHIAL LIFT BAG IT WON'T LET YOU DOWN

BY BONNIE J. CARDONE

A certain friend of mine must eat magnets—he certainly has a magnetic attraction to lost anchors. In the past six months he has found and salvaged six, ranging in size from a lightweight one suitable for use in an inflatable boat to one that weighed about 100 pounds and had nearly 200 feet of anchor chain (5/16 inch) attached to it. Thus, when I wanted to test American Radhial's 250 kg (550 pounds) lift bag, I took it with me on several trips aboard the charter dive boat on which Ed, the anchor-finder, is second skipper. The day he discovered the 100 pound anchor is the day the Radhial got its test.

The anchor was lying in 100 feet of water and Ed knew he'd need more than the small lift bag he always carries to salvage it. He marked the anchor with a float and returned to the boat for the Radhial. Fully inflated, it brought both the anchor and chain to the surface and Ed wended his way through the kelp back to the boat. It wasn't easy, because the kelp kept getting tangled around the line, chain and anchor, but he did it and the Radhial bag didn't let him down (literally!).

If the name American Radhial sounds familiar but not too much so, it's probably because you remember seeing our article on the Italian company's inflatable boat (December '82). The boat has an outer skin of Erstrom, a plastic material that is a mixture of vinyl/polyurethane on 1000 denier Trevira. All seams on the boat are electronically welded rather than glued. The company's six lift bags are constructed of the same material as the boat, only the outer coating is slightly thinner. The seams on the bags are also welded.

The 250 kg lift bag is one of two that falls into the sport diver use category. The second bag has a capacity of 100 kg (220 pounds), while the other four have capacities that range from 500 kg (1100 lbs.) to 2000 kg (4400 lbs.).

From the steel ring that forms its 11 inch diameter base to the dump valve on top, the 250 kg lift bag measures 40 inches. The stainless steel ring is 13/16 inches thick and has nylon ropes attached to it in four places. The dump valve can be operated with a pull cord that hangs down inside the bag or by pushing a metal valve outside, on the top.

Inside the bag there is a welded pocket that contains a patching kit: A four step instruction sheet in four languages (English, French, Italian and German); a tube of glue; two 2 x 3 3/8 inch, clear patches. (Note: Although the patching kit appeared to be sealed in a watertight plastic bag, this leaked, the orange instruction sheet got wet and now one of the patches is also orange. I would suggest keeping the instruction sheet elsewhere or memorizing its simple steps and getting rid of it altogether—orange patches won't look good on a white bag.)

Lift bags are easy to use. When you find an item you want to salvage, attach it securely to the nylon ropes that hang from the steel ring. (A knowledge of some nautical knots will be invaluable here.) Then, put your regulator second stage (or your octopus) inside the bag and push the purge button. Add air until the bag begins to rise off the bottom. Keep in mind that the air in the bag will expand as it rises and the bag will get more buoyant as it gets closer to the surface. Use the pull cord to release air through the dump valve if the bag begins to rise too quickly. You can control the ascent by holding onto the line between the object and the bag and flaring your body as well. Make sure that no one is directly below the salvage item and



photo/Bonnie J. Cardone

that none of your equipment gets tangled on it.

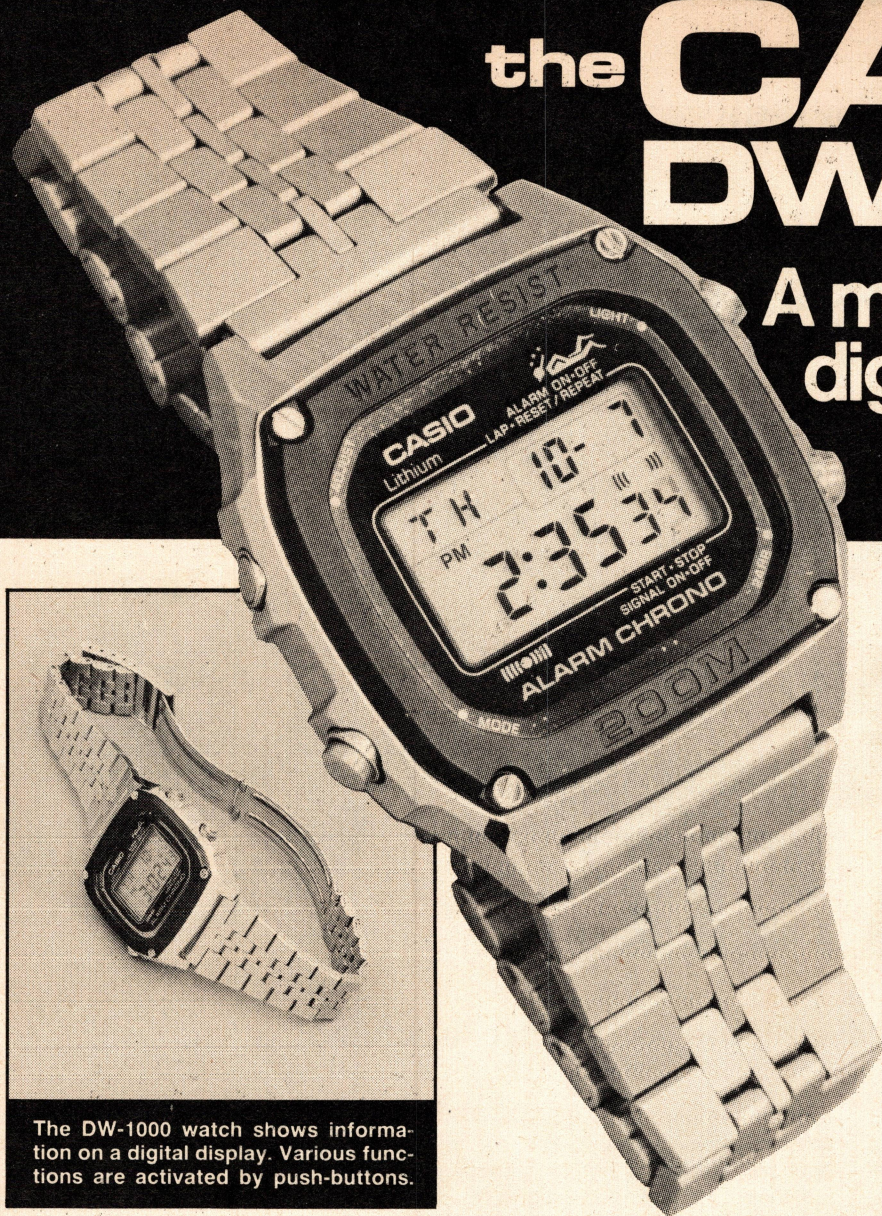
Although the 250 kg is designed to lift objects that weight up to that much underwater, it can be used for items that weigh much less. If you need less lift, simply put less air into the bag or use the dump valve to release some.

The American Radhial 250 kg lift bag sells for \$100 at your Radhial dealer. For the name of the one closest to you write; American Radhial, 136 Charwood Circle, Rochester, NY 14609 or call: (716) 637-4150.

the CASIO DW-1000

A multi-functional digital for divers

BY JIM WALKER



The DW-1000 watch shows information on a digital display. Various functions are activated by push-buttons.

It wasn't long after the dive boat left the dock that the diver's eyelids got that familiar heavy feeling and he went below and crawled into his bunk. The trip to the dive site would take about two hours and the diver knew that in times past he had slept soundly until the boat anchored—making him one of the last into the water. This time, however, he knew he'd be able to get up in time to be dressed and ready when the anchor dropped. This time he was wearing the Casio DW-1000 dive watch. He set the alarm on the watch for his wake-up time and dozed off.

The DW-1000 is, in a word, *functional*. This comes not only from its sturdy design (four push-buttons are the only moving parts), but from the functions the watch will perform. These include: a day/date/time display (time in 12 or 24 hour cycle); alarm; countdown alarm; stopwatch (including lap times); and half-hourly/hourly time signal. In any mode the time is always visible, either as the

main display or in the box at the upper right of the face, and the watch is accurate to plus or minus 15 seconds per month. All these functions are housed in a stainless steel case which is water resistant to 200 meters and is attractive enough for any dress-up occasion.

Time and other information is shown on a digital, liquid crystal display (LCD) nestled behind a scratch resistant glass crystal. The crystal itself is recessed slightly under a black frame which is held in place by four screws. No bezel is necessary as the stopwatch function is used to keep track of bottom time.

The DW-1000 used for the SKIN DIVER test came with an attractive stainless steel band secured by a snap clasp. It was supplied by On The Run of Fargo, ND. The watch also comes with a resin band (model DW-1000C).

The buttons which set the various functions of the watch are small. They are easily pressed with a thumb or forefinger, but in most cases won't get pushed acci-

dentally. I did find that, when wearing my depth gauge right next to the watch, in certain wrist positions the watch was pressed against the gauge and the mode button pushed. This was no real problem, however, as simply pressing the mode button as necessary brought back my stopwatch function (still running) and thus the correct bottom time. To prevent pressing buttons accidentally, simply wear the watch away from other gauges.

Three of the DW-1000's buttons are spaced far enough apart and protrude enough so they can be pressed with gloved fingertips. The fourth, which adjusts the time, is recessed into built-up shoulders of the case and must be pressed with the edge of a fingernail. However, the only button that should ever need pressing underwater is the one which activates a light on the display—this for low light conditions. Once the stopwatch (bottom time) is activated its display is continuous. The other modes are generally unnecessary underwater.

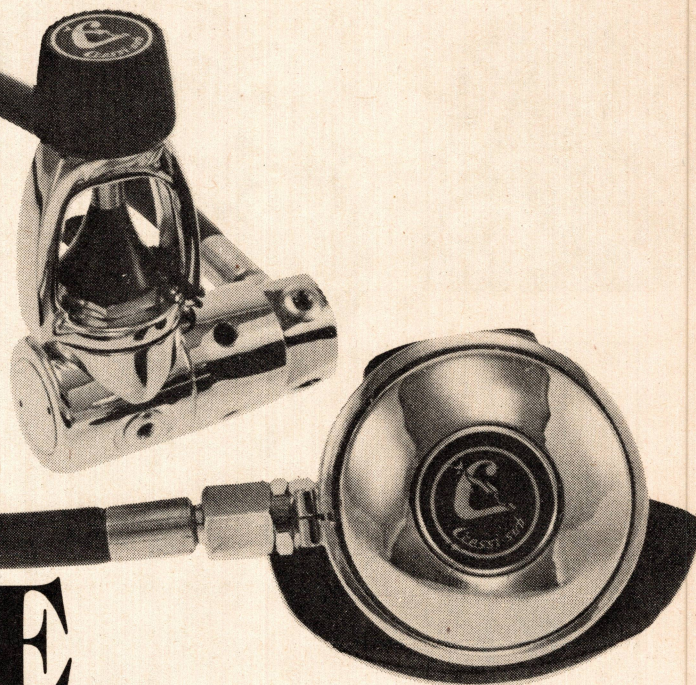
The DW-1000 operates on a single lithium battery (type BR-2020) which is rated to last approximately seven years (assuming an average of one push of the light button per day of one second duration, and an alarm signal of 30 seconds per day). If the battery runs down it should be replaced by the dealer from whom the watch was purchased or at an authorized Casio distributor.

The DW-1000 needs only simple care: Avoid exposing it to extreme heat or cold. Avoid excessive bumps and bangs. Clean only with a dry cloth, or cloth and mild soap solution. Never expose the watch to harsh chemicals such as cleaning solvent, aerosol spray, lacquer thinner, benzene, paints and gasoline.

The DW-1000 comes with a one year limited warranty and instructions on care and operation. With just a little practice and no help I was able to program all functions. The DW-1000 retails for \$69.95 and the DW-1000C is \$59.95—at Casio dealers nationwide. 

GALAXIE

CRESSI-SUB GALAXIE



TEXT AND PHOTOGRAPHY BY GEORGE COZENS

The new Galaxie is a two stage, single hose scuba regulator introduced to the United States in the latter months of 1982 by Cressi-sub of Miami, Florida. This company is the U.S. distributor of the large Italian dive equipment manufacturer with the same name. Shunning the more exotic designs, Cressi-sub decided to stick with a straightforward, conventional regulator as the choice for this top-of-the-line model.

The first stage is essentially identical to that of the Cressi-sub Polaris V "S" (SDM March, 1982). Both of these first stages are based on the very popular balanced, flow-through piston design which is relatively simple. Basically it involves a valve that opens and closes in response to changes in pressure. The piston resembles a length of tubing with a broad flange at one end. This flange is fitted with an O-ring around its circumference, in order to separate the ambient and intermediate pressure (IP) chambers within the first stage. In this arrangement, intermediate pressure acts on one side of the piston, trying to push it closed (i.e., push the stem of the piston against the high pressure seat), while ambient pres-

sure and an adjustable spring (within the ambient pressure chamber) shove in the opposite direction, trying to open the piston valve. This spring is used to regulate the amount by which the intermediate pressure exceeds ambient pressure. The other (small) end of the piston has an O-ring too, to seal off the high pressure (HP) cavity from the ambient pressure chamber. Assume, now, that the first stage is connected to a tank and the air turned on. Air will flow into the HP cavity, down the length of the piston and into the IP chamber, where it builds up enough pressure to push the piston closed. If the diver inhales from the second stage, or the purge is depressed, the intermediate pressure drops, allowing the spring and ambient pressure to shove the piston open, resulting in a flow of air to the IP chamber, the restoration of intermediate pressure, and the closing of the valve again. Notice, also, that an increase in the ambient pressure (e.g., when the diver descends deeper) opens the valve, until the intermediate pressure can increase enough to overcome the spring compression (constant) and the higher ambient pressure and close the valve.

Therefore, this design automatically compensates for pressure changes at depth; supplies air on demand (when the diver inhales); and, as a side benefit, is balanced, since it is not affected by changing tank pressure. Small wonder this type of flow-through piston design is sometimes referred to as an "automatic, balanced, demand first stage."

The first stage housing of the Cressi-sub Galaxie is machined from solid brass, and then chrome plated. The yoke, forged in brass and chrome plated, swivels, allowing flexibility in the positioning of the first stage on the tank valve, in an effort to reduce hose strain. The result of the heavy duty construction in the housing and yoke is a manifold (supply) pressure rating of about 300 atmospheres, or slightly more than 4400 psi. Critical, internal components of the first stage are made of stainless steel. These include: the piston; the spring; and three pins, which are used to transmit the setting of an adjustment ring to the proper compression in the spring. This adjustment ring is accessible by merely removing an external finishing cap with a spanner wrench: thus, the intermediate pressure

can be adjusted without disassembling the first stage. Although easy to do, adjustment of the intermediate pressure should only be done by a trained technician. Other features of the Galaxie first stage include: one high pressure port, identified with the initials, HP; and three low pressure ports (LP) on a swivel block to lessen hose kinking.

The first stage delivers intermediate pressure air at a nominal nine atmospheres (about 132 psi) and at a flow rate, according to Cressi-sub, of up to 1800 liters per minute. The hose connecting the two stages is 27 inches long and tested to 80 atmospheres.

The second stage is based on a conventional, downstream demand valve design: "conventional" because Cressi-sub started with a well established design, which has had vast field experience, and spent over a year refining it to improve its performance; "demand" because upon inhalation a low pressure region is created within the second stage that draws in the diaphragm, and in so doing, pushes on a lever which opens the supply valve; and "downstream" because the supply valve opens in the direction of air flow. This design is inherently safe, since it automatically vents off any overpressure owing to a malfunctioning first stage.

Both the front and rear halves of the Galaxie second stage case are made of chrome plated brass, held together with a ring clamp of the same material, and secured with a stainless steel screw. The large, flush purge button is held captive in the front half of the case, supported by a spring, so that the button only deflects the diaphragm when physically depressed. The diaphragm is made of silicone rubber, and, hence, is more sensitive to pressure changes, and is less susceptible to deterioration from chemicals such as ozone and chlorine. Neoprene rubber is the material used in the mouthpiece, exhaust valve and exhaust tee (which, incidentally, is secured with two stainless steel screws to prevent its inadvertent loss). For longer wear and more resistance to corrosion, the demand lever and the demand (supply) valve are stainless steel.

Among the improvements made by Cressi-sub in the original design are: a reduction in the internal volume of the second stage, for easier clearing if it gets flooded; a baffle, which channels some of the air directly into the mouthpiece tube to take advantage of the venturi effect for reduced inhalation effort; and a means of adjusting the demand valve from the outside, without having to remove the hose. The result of these refinements is a second stage which, according to the manufacturer, is capable of delivering air to

the diver at up to 750 liters per minute.

Routine maintenance for this regulator is the same as that recommended for any good regulator. Rinse thoroughly with fresh water after use, and let drip dry. Avoid long exposures to direct sunlight or other sources of heat. Replace the dust cap on the high pressure inlet when the regulator is not in use—and keep water out of the sintered filter. And, have the unit inspected and/or serviced at least annually by a trained technician.

As mentioned in previous articles, I try to make an evaluation by comparing the unit in question with a regulator of known characteristics, under identical conditions. The comparison regulator in this case (not to mention names) was one of the top performers in the 1979 U.S. Navy Experimental Diving Unit regulator tests. With this in mind, I am pleased to say that in my comparison the Cressi-sub Galaxie performed very well. It was a dry regulator in all but one awkward position, and

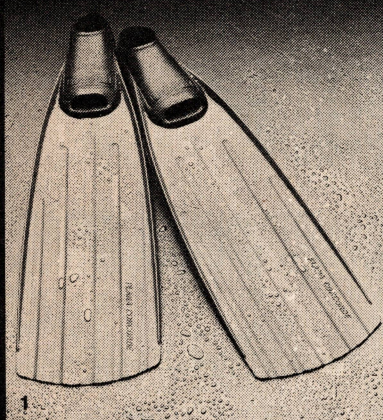
even then, only a slight trickle of water found its way into the mouthpiece. Exhalation resistance seemed quite low, respectively, for the various positions I tried in the water. Inhalation resistance was also quite low, in the range from very light sipping to moderate inhalations, but seemed to increase somewhat when greater amounts of air were demanded. Considering the relatively low inhalation effort at normal breathing rates, I was surprised to find that freeflowing was not more of a problem—in fact, it was no problem at all: In all cases, even with the mouthpiece facing up, freeflowing stopped by itself within seconds. No problems were observed.

The Cressi-sub Galaxie appears to be well made. Its design, breathing characteristics and price (\$290 U.S.) should make it suitable for general sport diving activities, and, because of the absence of freeflowing, it should be well suited for instructional applications. 



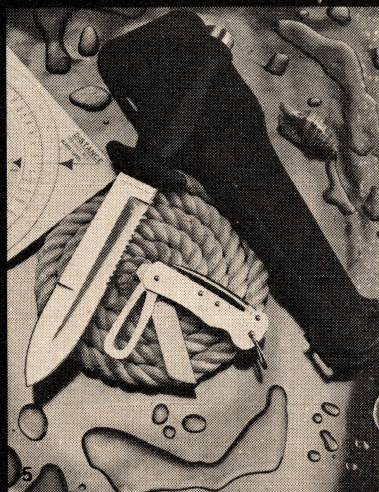
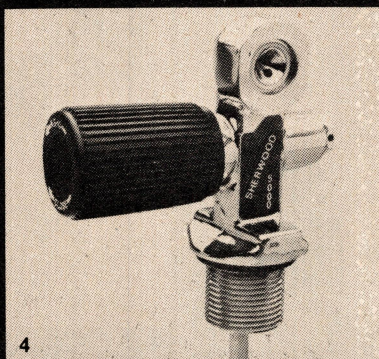
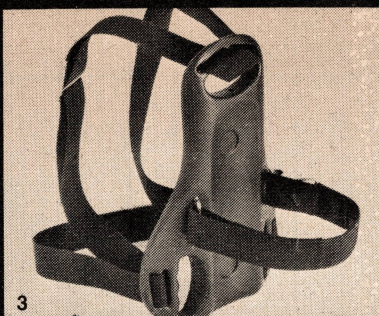
The Cressi-sub Galaxie regulator first stage (left) has a swivel yoke, one high pressure port (marked HP), and three low pressure ports on a swivel block. The second stage case (above) is chrome plated brass and the mouthpiece and exhaust tee are neoprene rubber. During testing the Galaxie was found to be a dry regulator, with very little inhalation and exhalation resistance. Freeflowing was no problem, stopping by itself within seconds.

New Gear



1 Long Blade Fins—Plana Concorde fins have full foot pockets and extra long blades to provide more thrust with less effort. Lightweight Tecralene material resists deterioration and separation from foot pocket. Special arch supports transfer kicking power directly to blade. \$75. Sizes 6-11. From SeaQuest dealers.

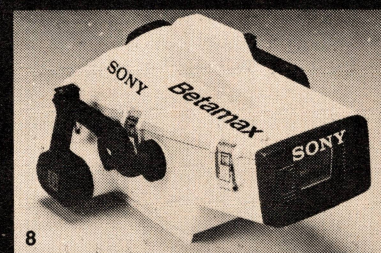
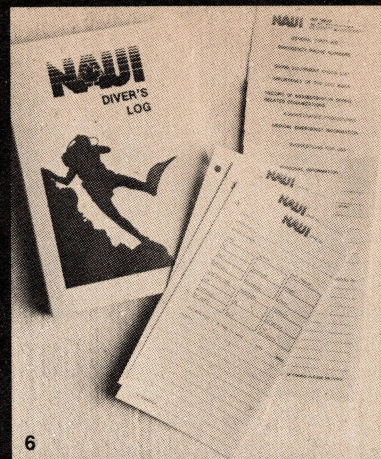
2 Wetsuits—Perfect for cold water diving, Henderson's famer john wetsuit comes in men's and women's models in custom or stock sizes. Optional accessories are available. G231 Rubatex, nylon two, 1/8 inch material, \$263.95. 1/4 inch, \$299.95. Suits are also available in shiny Lycra. From Henderson dealers.



3 Backpack—The Velcro closed, flexible band allows this backpack to be quickly adjusted for an exact fit on aluminum or steel scuba tanks. Soft band allows easy packing. Molded-in handles with finger grip design facilitate carrying. Quick Ditch buckles on waist and left shoulder. \$56. From Dacor dealers.

4 Tank Valve—The SVB 5000 scuba tank valve is triple chrome plated. It features an extra long, slanted back hand-wheel. One piece safety disc assembly is positioned in a boss opposite hand-wheel. The low pressure auxiliary O-ring seal is fully captured by Teflon bearings. \$45. From Sherwood Selpac dealers.

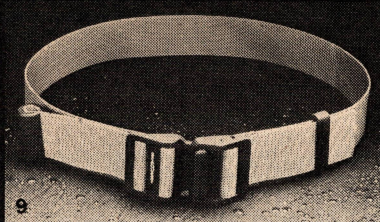
5 Knives—The SP-733 has a 6½ inch stainless blade and rubber handle with hammer end (\$43.95). The P-821 includes a marlin spike, shackle tool and 2½ inch knife blade with screwdriver end. 100% stainless steel (\$24.95). From Dingo Cutlery Co., 4509 NW 23rd Ave., Suite 9, Gainesville, Florida 32601.



6 Dive Log—Three ring diver's log book is durable white plastic. It is designed to hold dive tables, more than 200 log sheets, and other information. Features NAUI Canada's blue and red logo on the cover. \$5.95. Log refills (25 per pack) 75 cents. NAUI Canada, Box 510, Etobicoke, Ontario M9C 4V5.

7 Armband—Numbers can be permanently placed on these neoprene armbands with indelible markers. The combination of numbers and/or letters, and colors (bands come in red, blue and orange) can be used to distinguish buddy pairs or certification status underwater. Ten for \$25 (one color). From PADI.

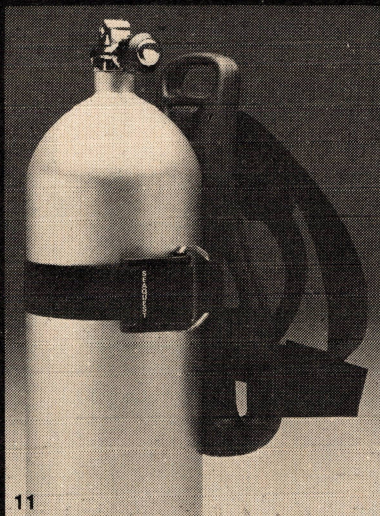
8 Video Housing—The Marine Pack underwater housing is designed to accommodate the Sony SL-2000 Beta-max video recorder and a Trinitron camera. The Marine Pack (MPK-60) is depth rated to 200 feet and measures 19x13x25 inches. Built-in microphone. Appx. \$3000. From Sony dealers.



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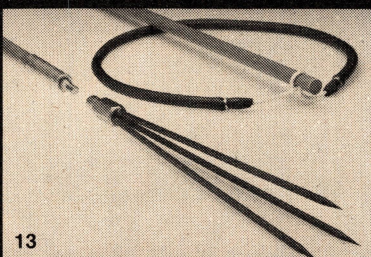
9 Weightbelt—The SeaQuest Positive Release Buckle opens with just a pull on the grip—one quick motion is all that's needed. Belt can be adjusted while buckle is closed by pulling the strap or lifting the loosening lever. The buckle is high impact Delrin. The belt comes in four colors. \$19.50. From SeaQuest.

10 Facemasks—Corsara masks combine single glass lenses with nylon frames. Soft rubber skirts ensure a good seal to face. The Corsara (\$19.95) is designed for average faces and has an orange frame. The mini-Corsara (\$18.50) is smaller and has a yellow frame. From AMF/Mares, at your SeaQuest dealer.

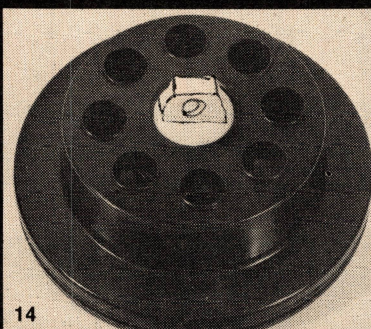
11 Buckled Tank Pack—SeaQuest backpacks are now available with a two inch wide, one piece tank band buckle. Buckle gives non-slip cylinder retention when combined with a soft band. System fits all standard tanks, will not corrode and stores neatly in a gear bag. \$52.50. From SeaQuest dealers.



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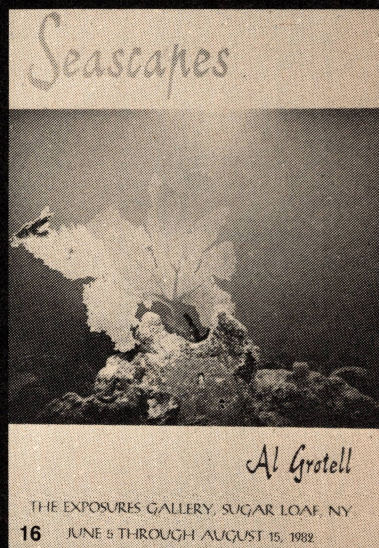
12 Buoyancy Compensator—The Sea Jacket 44 fits around the shoulders, providing a comfortable fit. SeaQuest backpack is standard. Model 44 is large and model 38 is the medium size. 44 with 25 gr. CO₂ \$345 (CO₂ stubbed \$332.50). 38 with 25 gr. CO₂ \$340 (CO₂ stubbed \$327.50). From SeaQuest dealers.

13 Spear Pole—Paralyzer head screws on either a five or six foot fiberglass shaft. Neoprene slings power the spear and are easily replaced. Disassembled spear allows safe, easy transport and packing. Light and flexible. Head and five foot shaft, \$29. Head and longer shaft, \$30. SeaQuest/Mares dealers.

14 Lift Bag Valve—A new, 175 cubic feet per minute dump valve is being built into the Professional lift bags (one to ten ton capacity) from J.W. Automarine. Valve can be operated by pressing a plunger on it or by pulling a lanyard at the bottom of the bag. Professional series lift bags range from \$521 to \$3,434.



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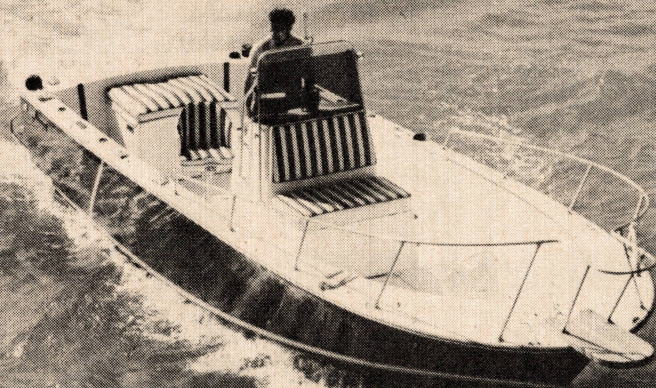
16



15 Dive Knife—Z-Lock knives feature handles and sheaths molded from a fiberglass reinforced thermal resin. Blades come in an assortment of steel alloys. Knives have push-button locking in sheath and can be disassembled for interchange of components. Model 8524 (pictured) \$49.50. From Wenoka.

16 Poster—Produced for an underwater photography exhibition, Seascapes measures 20 x 28 inches and is printed on museum quality, heavy stock. The six color poster is made from a photo taken by Al Grotell. Each \$12, including tax, handling and shipping. From A. Grotell, 170 Park Row, New York, NY 10038.

17 Automatic Strobe—The 2002 automatic strobe will eliminate exposure decisions. The sensor is accurate under variable light levels through its three filters. With a high energy thyristor system, the strobe can develop 360 flashes with a recharge time of two seconds between each. \$765 from Oceanic.



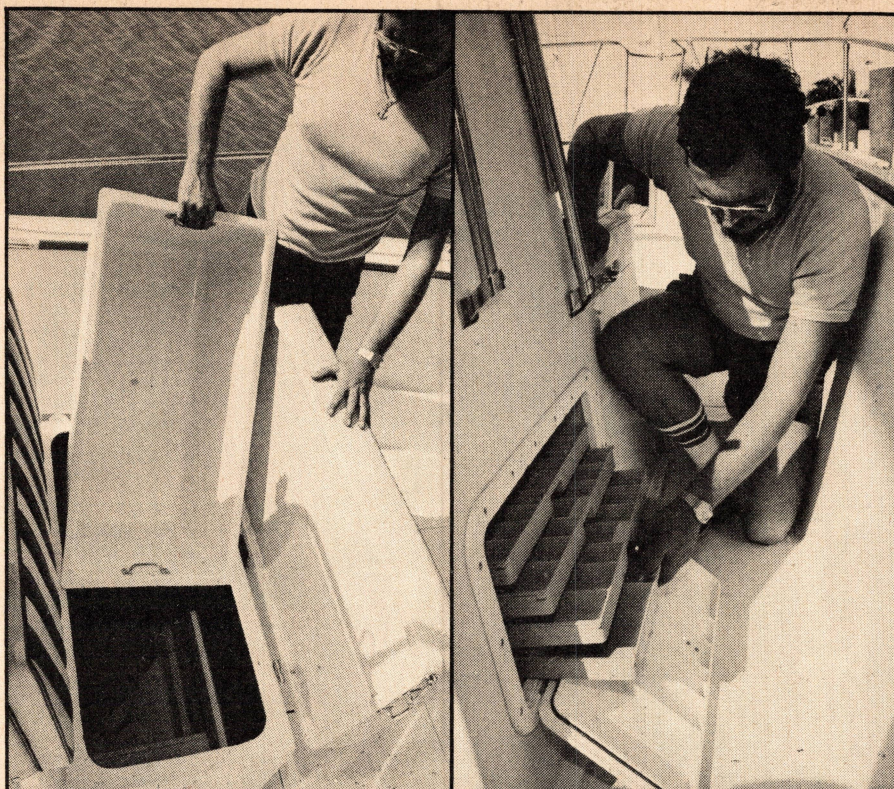
ANACAPRI'S V-25 ANGLER

Smooths out the waves for a dry ride

TEXT AND PHOTOGRAPHY
BY STEVE LUCAS

The wind was gusting at a stiff 20 knots as we rounded the southeastern end of Miami's Key Biscayne and headed across the flats toward the open ocean. Serge Avsenew of Anacapri Marine, Inc. had been running the 25 foot Anacapri Angler at a brisk 30 knots on the medium chop of the bay to show me just how well this tough hull design reacted to wind and spray. Now he was determined to give me an even more impressive performance in the three foot and higher swells of the Atlantic. Without dropping the power we flew directly into the waves. I would be exaggerating if I said the ride was comfortable, but I can honestly say that it





Anacapri's V-25 Angler combines a modified V-hull with a double chine, concave bow flare, and high freeboard to provide a smooth, dry ride—even in a crossing sea. The boat has lots of wide-open deck space and nine storage compartments, including four large enough for full gear bags, and one tackle/parts box.

ANACAPRI V-25 ANGLER

Length	24'10"
Beam.....	8'
Weight.....	2400 lbs. (without engine)
Fuel Tank.....	80 gal.
Hull.....	Modified V
Engine ...	Inboard/Outboard or Outboard
Price	\$14,586 (without engine)

was amazing. The ride was fairly smooth and definitely dry.

The Angler has a modified deep V-hull, a design which, in most cases, is noted for providing a comfortable ride while at anchor, but is not noted for great handling in rough water. The Anacapri hull, however, took the swells in stride and directed the spray well away from the boat.

Anacapri's quality ride comes from a number of design features. The modified V-design has a double chine (slight steps

on the hull's bottom), a very deep concave bow flare, and exceptionally high freeboard. Forward, the freeboard is a full 45 inches, while aft it is still 32 inches. These features combine to smooth out the waves and throw spray well out to the side. Even in a crossing sea the water is thrown at such a low angle that little is picked up by the wind and tossed back onto the passengers.

The V-25 Angler is an extremely well made piece of boating equipment. The hull is hand laid, alternating mat and roving fiberglass over treated balsa. At many points the hull is well over an inch in thickness with the average at something close to three-quarters of an inch. As a result the owner of this boat can expect long life and very little hull stress cracking owing to rough use.

All of the accessory equipment from the railing to the seats is made directly in the Anacapri factory. All rails are stainless steel and are through-bolted for maximum wear and strength. The boat provided to SKIN DIVER came equipped with double dive platforms with only a single step. I asked Avsenew why they didn't build a more rugged ladder for divers. His response was that if I had asked the day before and told him exactly what I had in mind it would have been on the boat today. His point was well taken. If

the new owner has a specific need or design he wants incorporated into his boat it can be quickly built to his exact specifications. This includes all necessary parts of the boat. Even the teak is custom cut in-house.

One of the strongest features the Angler has going as a dive boat is its tremendous amount of storage and roominess. Being a full eight feet wide the boat has enough below deck storage to carry full gear for a half-dozen or more divers including below deck space for most of the tanks. From bow to stern she has nine large hidden storage compartments. In the foredeck are four enclosures large enough to hide full gear bags, the center one big enough to hide a number of tanks. The seat just forward of the console opens to reveal a large cooler. The liner can be easily lifted out to offer additional storage several feet in depth. In the lower half of the center console there is lockable, padded storage for cameras and more fragile equipment. Aft are two more compartments which are primarily designed as baitwells, but which can easily be used to store small gear. On the starboard side of the console there is a hidden fishing tackle box. This would provide a good place to keep spare O-rings and small parts or tools.

Available in either inboard/outboard or outboard models the boat is easily large enough to be used as a working dive boat. Several are in service at Caribbean resorts for just that purpose—a few years ago I dove from one on a remote island. We found that even with 10 divers on board there was adequate room.

Anacapri's list of standard equipment is quite impressive. Some notable standard features include: Bimini top, 80 gallon fuel tank (an optional 30 gallons can be added), navigation lights, rope or aluminum rub rails, bilge pump and teak doors. With the ability to design your own or choose from a list of over 50 standard options you can add almost anything you want. Serviceable options the diver may want to consider include: tuna tower, bow pulpit (to aid in raising the anchor), foam flotation, tank racks and dive platform.

List prices for the V-25 Angler begin at \$14,586 less engine and trailer. The same hull is also available in a cabin model for the diver who wants overnight sleeping space or greater dry storage. List for the Holiday 25 (with cabin) begins at \$16,889. The Angler with a 200 hp gas V-8 engine starts at \$19,989. Diesel engines are optional.

Anacapri boats are available from select dealers from California to the Caribbean including Puerto Rico, Grand Cayman and Jamaica. Most of the lower eastern U.S. is served on a factory direct basis. For literature, dealer information, or additional prices contact: Serge Avsenew, Anacapri Marine, Inc., 3660 N.W. 41st Street, Miami, Florida 33142; (305) 635-7502.



photo/Geri Murphy

Low Volume To The Max **MARES** TANA MASK

BY JIM WALKER

We're talking *low volume* here! The AMF Mares Tana mask is only five and one-half inches wide and fits so close to the face that it gives better vision and comfort than some pairs of sunglasses I've owned. This low volume design makes equalizing the mask pressure

at depth almost an afterthought, and the low profile reduces drag to the point of unimportance.

The Tana has dual, tempered glass lenses. When combined with the low profile of the mask the lenses give a wide field of view. The lenses are held in place by a tough nylon frame which comes in either translucent blue or opaque black. The frame has an attractive, racing-goggle style and just a touch of flex. The flex and the slight recess of the lenses into the frame should give some protection against damage from heavy objects in a gear bag.

The skirt of the Tana is soft, hypoallergenic

silicone rubber (translucent or black). This material is comfortable, non-irritating, and resistant to sunlight and ozone. The edge of the skirt has a double seal which adheres to the face as if it were custom made. The nose pocket is easily reached by gloved fingers.

The Tana's strap is attached to the mask frame by two Delrin buckles. The buckles swivel up and down slightly to better accommodate individual preferences in strap placement without creating an odd-angle pull on the mask itself. The buckles grip the strap snugly. To slip the strap through for adjustment, a slide on the buckle must first be pulled open slightly. Major adjustments should be done before a dive, but in a pinch the strap fit can be changed (especially tightened) underwater. To prevent the strap accidentally coming completely out of a buckle, ridges are built into the strap near each end.

If you're in the market for a dive mask, the AMF Mares Tana is definitely worth checking out—especially if you have a hard to fit or narrow face. The Tana in the black/black combination sells for \$30 and the translucent blue frame with clear skirt is \$33 at your nearby SeaQuest/Mares dealer. 

DIVE Jamaica

SDM SPECIAL SUPPLEMENT





Dive Jamaica

FIRST COMPLETE GUIDE TO JAMAICA'S NEW SCUBA PLAYGROUND

Seen from the air, Jamaica gives you the impression of immense size. The island is 144 miles long by 52 miles wide with a total area of 4411 square miles. The Blue Mountains, rising to 7402 feet, are especially dramatic with their blue-green cast in sharp contrast to the shining white beaches and sparkling blue waters. Typically such a combination of awesome natural resources would result in a booming tourist economy, but this was not the case in the late 1970's. The economy was not healthy and the people were not happy. The Socialist government of Prime Minister Michael Manley was not effective in its program to redistribute the wealth. In the absence of incentives, many of the nation's more productive individuals left the island, times got tough, and violence occurred with some regularity. In fairness to the north shore were well-insulated from the violence. Most of the civil disturbance occurred in a one and one-half square mile area of southeastern Jamaica which Manley referred to as "ghetto Kingston." But the tourist could not remain unaware that things were not right. Children would aggressively hustle incessantly for spare change, street vendors would aggressively hustle for changing the negative direction of Jamaica, but something Prime Minister Edward Seaga in 1980 was solely responsible for creating a new identity for this island paradise. The Seaga Government has emphasized law and order coupled with an aggressive campaign to entice the tourist to rediscover Jamaica. The Jamaica Tourist Board has created catchy slogans such as "Jamaica is more than a beach, it's a country," "Come back to Jamaica," and "Make it Jamaica." All they're asking the tourist to do is give them another

TEXT AND PHOTOGRAPHY BY STEPHEN FRINK



chance, for the Jamaica of today will sell itself on its own merits.

Having been on the island in 1979, I was struck by the improvements the moment I left the Air Jamaica jetliner after a smooth and courteous one and one-half hour flight from Miami. The last time I was in Jamaica, the time I spent in the Donald Sangster airport in Montego Bay was interesting, albeit a bit threatening. I was regularly approached by street hustlers hoping to sell sex or drugs. Today the scene is much tamer. You may still get approached to buy ganja occasionally, but the requests are polite and there is no feeling of hostility when the product is refused. More often street vendors will approach you with the request, "Need change? Got two for one." For the uninitiated, this jargon means if you need your U.S. currency exchanged for Jamaican dollars, the vendor is willing to exchange at a ratio of two Jamaican to one U.S. dollar. This is better than is available from the bank. Subject to currency fluctuations, the standard exchange rate is \$1.00 U.S. = \$1.78 Ja. Here is the catch though—Jamaican regulations make it illegal to take Jamaican currency in or out of the country. Banks are authorized to issue currency declarations and you may exchange your remaining Jamaican dollars at the bank prior to your return with proper documentation. Dollars bought from the black market on the street may not be redeemed for U.S. dollars. In addition, it is always a good idea to honor the laws of the country of which you're a guest, so banks are the best places for currency exchange. Note also that most hotels require foreigners to settle their bills in the currency of their home country. Major credit cards are honored many places as well, but make sure whether the price you are being quoted is in Jamaican or U.S. dollars.

HISTORY

Jamaica itself offers a diversity of lifestyle and topography. The capital, Kingston, is the largest English-speaking city in the Caribbean and South America. It is the political and financial seat of the island with a natural harbor that is the seventh largest in the world, and a population estimated at 655,000. Kingston is also the main manufacturing area of the island with extensive shipping and distribution facilities.

The evolution of Kingston into a center of commerce, like so much of Jamaican folklore, is full of drama and historical interest. Port Royal, 12 miles from Kingston, originally developed into the shipping capital of Jamaica. The buccaneers began using Port Royal as a base in 1664, but the infamy of Port Royal blossomed in the 1670's under the direction of the pirate, Henry Morgan. Born the son of a Welsh farmer, Morgan ultimately ran away to join the pirates of Tortuga. Bloodletting and leadership apparently

suited him well and he soon became a commander. Port Royal became his base of operations and gold began flowing into the city at a prodigious rate. Fine brick houses went up on Wharf Street, the predominantly Jewish merchants plied their trade on Jews Street, and in general, Port Royal prospered. By 1670 Port Royal was only slightly smaller than Havana or Panama, and certainly larger than New York City.

Along with the wealth came tales of degeneracy and violence. Port Royal assumed the dubious distinction of the "Wickedest Place in Christendom." The body of a murdered man would lie about on the dance floor until the music stopped, knife fights were an everyday occurrence, and even the common seaman walked about town with an expensive jewel-studded golden earring dangling. All the while the buccaneers continuously poured stolen booty into the local economy. In fact, the pirate influence was so strong that in 1682 Henry Morgan was made governor of Jamaica. Fortunately for the Jamaica Tourist Board, in 1691 a massive earthquake struck the Port Royal area and much of the city sank beneath the harbor. The survivors moved to the site of modern-day Kingston, and by 1872 Kingston had become the nation's capital city.

The action for today's sport diver is not in the Kingston area, however, but in three distinct geographic locales elsewhere on the island: Negril, Montego Bay and the Ocho Rios/north coast area.

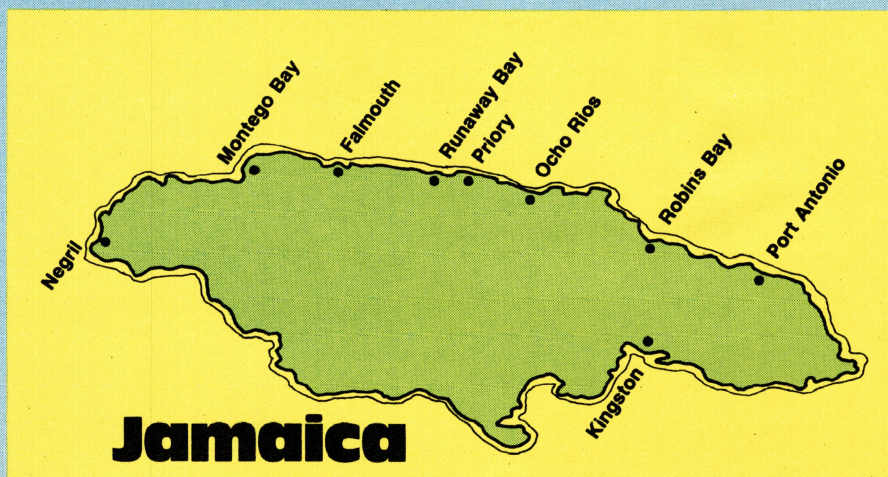
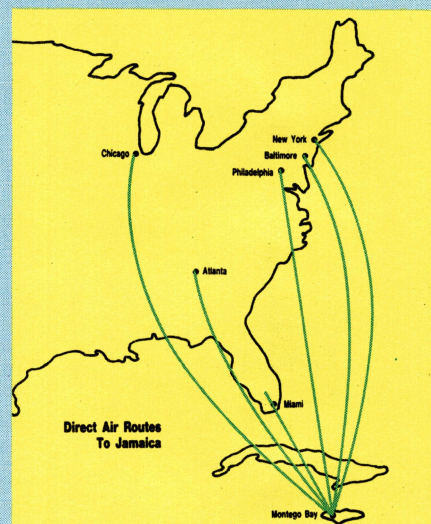
Negril

Transportation to Negril from the Montego Bay airport may take several alternatives. We chose to rent a car and drive the picturesque one and one-half hour route. Incidentally, the roads are well-marked and in good repair. So, aside from remembering to drive on the left side of the road and avoiding the occasional goat grazing on the road shoulder, driving in Jamaica is easy. However, if you are staying at one resort the duration of your vacation, hotel transfers

might be more convenient and certainly less expensive. There are a number of tour operators contracted by the different resorts to transport their customers from the airport and most include this service as part of a pre-booked package. Ask your travel agent for specifics. The final option for transportation from the major airports is via Trans-Jamaican Airlines. With daily service to Kingston, Montego Bay, Negril, Ocho Rios, Mandeville and Port Antonio, Trans-Jamaican can place you a step closer to your destination.

Negril is the latest resort development on the island and is still relatively small—population only 1166. But it has a beautiful seven mile strand of pure white sand beach and is situated along the lee side of the island. This same combination of geographic assets has turned Grand Cayman into a major tourist center, and in the face of the optimistic and professional tourist promotions being conducted by the Jamaican government today, Negril is destined to thrive.

Since it is on the lee, the winds can be churning six foot seas along the north coast but Negril's waters will remain flat calm. Consistency is not the only advantage to diving Jamaica's lee. Admittedly, there are not the steep drop-offs and dramatic walls that characterize Montego



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Bay and the north coast, but the diving I saw off Negril was quite excellent.

Our first stop was the Hedonism II resort. This beautifully manicured complex is patterned to a Club Med concept in that for your basic fee, all your food, drinks, and activities are provided. This even includes one dive per day free. Night dives, wreck dives and additional dives may be arranged for a fee, but the basic package will get you in the water every day of your stay if you so desire.

The dive operation is under the direction of Bill Elkington, a British instructor with considerable experience in running diving businesses. Bill was working for the British publication *Subaqua Scene*, came to Jamaica on assignment, met his future wife Joie and fell in love with the island all at the same time. Today Bill and Joie work as a team on a very professional dive facility featuring a 36 foot open fiberglass dive boat able to transport 25 divers, Dacor 80 cubic foot aluminum cylinders, rental Dacor Pacer regulators as well as a full complement of masks, fins, snorkels, etc. Resort courses and full certification classes are available upon request but are not a standard part of the resort package.

While the dive boat may be able to accommodate 25 divers, rarely will that many hotel guests show up for the dive program. There are activities going on constantly at Hedonism II and the full watersports program includes boardsailing, sailing, waterskiing, etc. so it is a lovely place for the diver/non-diver couple to vacation, although there is an obvious attraction to the singles market as well.

Our dive with Bill Elkington was made 15 minutes from the white sand beach at Hedonism II at a site called **Sands Club Reef**. The reef structure featured interesting undercuts; lots of sponges, both tube and encrusting; sizable fish populations; and even a resident eagle ray. I was quite impressed, although I must admit I approached the Jamaica dive scene with some skepticism. I'd heard that Hurricane David wiped out the hard corals in shallow water and that freshwater run-off from the rivers and overfishing had left the reefs devoid of life. It just goes to show you can't believe everything you hear, for the reality of Jamaica diving is that it is generally quite good.

Our next stop was the Negril Scuba Centre with facilities at the Negril Beach Club Hotel and at Rick's Cafe. The Negril Scuba Center is owned and operated by Peter Metrick, an affable American who has been in the dive business in Jamaica for four years.

Both boat and beach dives are available at each location, but it is the policy of most dive businesses on the island to require dive guides to accompany the guests. Therefore it is not possible to just rent a tank and take off from the shore on your own. The reason for this policy has more to do with the Jamaican dive opera-



Archways and soft corals enhance the U/W topography at many Jamaican sites.

tors' desire for a good safety record rather than a lust for extracting the maximum tourist dollar. The Jamaican Association of Dive Operators (JADO) has established very stringent requirements for their members in conjunction with diver safety and professionalism and is doing a great deal toward making Jamaica a primary Caribbean dive destination. The dive operations reviewed in the text of this article are all JADO members.

Negril has a sort of low key, relaxed and free atmosphere about it and Metrick manages to convey the same sort of feeling while still operating an efficient business. His primary boat is a 40 foot catamaran sailboat for a leisurely trip to the nearby reefs. In addition, he maintains a

24 foot wooden speedboat for the quick transport of small groups. Peter also uses aluminum 80 cubic foot cylinders and both U.S. Diver and Dacor regulators, and because of his locations was able to take people diving 355 days last year.

The Negril Beach Club features 97 rooms, (all with air conditioning), a swimming pool, beautiful beach, restaurant, watersports on the premises and a gift shop. Rick's Cafe is a popular restaurant and bar situated on a scenic cliff overlooking the sea. Named after the famous cafe of Bogart's *Casablanca*, Rick's has become famous in its own right. The food is excellent, particularly the smoked marlin and the daily sunset festivities are a Jamaican institution. Every day hundreds

DISCOVER NEGRIL



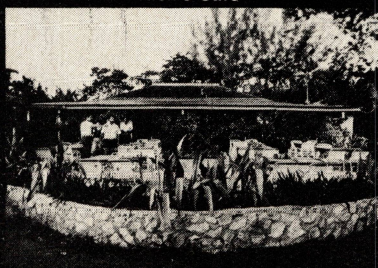
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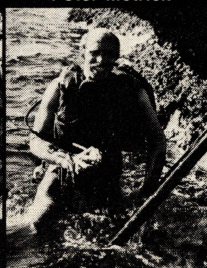
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Rick's Cafe



Peter Metrick



Negril Beach Club





A variety of excellent photo opportunities, including fish such as this coney, await divers at numerous Jamaican sites.

of locals and tourists gather along the cliff walls and bar stools at Rick's to celebrate the close of another day in a ceremony reminiscent of Mallory Square in Key West. The mood is festive and full of local color—a nice followup to an interesting afternoon dive with Peter.

During the pleasant afternoon we were able to spend with Peter Metrick he invited us to his home at Lighthouse Park. Dive lodging packages with Peter are available from the Negril Beach Club or people may rent quaint thatched roof bamboo cabanas at Lighthouse Park. We dove with Peter off the shore of Lighthouse Park at a spot ominously named the **Commando Training Dive**. Fortunately, the images conjured by the name were not valid, and instead we enjoyed a series of underwater caverns with openings to topside caves. After exploring these we swam out through a relatively barren bottom and discovered an interesting shallow reef with a variety of hard corals and a substantial fish population. Peter conducts this dive as a refresher for people who may not have been diving for awhile and uses the boat for the more spectacular sites.

Other popular dives to be found off Negril include:

Coral Gardens. In only 10-20 feet of water, expanses of white sand frame brilliant coral formations. Lots of bottom time and high ambient light make it superb for

the underwater photographer.

The Arch. This is a unique site with a natural coral arch, caves, crevices, and healthy sponge populations.

Kingfish Point. The most magnificent formations are in 90-110 feet of water and feature brilliantly colored sponge of multiple variety and ample fish populations. The Negril dive operators prefer that experienced divers only go on these deeper sites.

Montego Bay

To the Spanish settlers it was Manteca Bahia and was famous for lard, wild cattle and other exportable natural resources. For the English who came along next, it was Montego Bay and a busy center of commerce for shipping traffic plying the sugar market. And, after sugar was no longer profitable, bananas became the primary export. So, for years Montego Bay has had a healthy commercial base and today tourism is the major marketable commodity.

Our introduction to the Montego Bay diving community began at the Chalet Caribe hotel and the diving operation run by Theo and Hannie Smit. The Chalet Caribe is a very hospitable 28 room hotel with a swimming pool, air conditioning, restaurant and private beach. The dive operation, Poseidon Nemrod Club, is on the premises and utilizes a building on

the beach to house the compressor and store tanks, etc. The Smits are Dutch and closely affiliated with the Poseidon Nemrod Clubs of Europe. This is the largest professional divers' organization in Europe and is represented by independent dive affiliates all over the world. This is a sort of joint venture to assist in advertisement, training standardization and diver referral. To the American tourist visiting Chalet Caribe on a dive package, this is relevant because it shows the serious, professional attitude Theo and Hannie have toward their dive business. Despite their strong European roots, three-quarters of their guests last year were American or Canadian. And, as Jamaica is discovered by the American dive population, that percentage will probably increase. It is also interesting to note that diver certification with Poseidon Nemrod can be acquired in any of four languages through the auspices of several international certification agencies.

Both shore dives and beach dives are possible from Chalet Caribe. The shore dives can be wall dives, for the wall comes in very close along this area, but there is some very fascinating shallow reef as well. Most of the deeper dives are made from a Zodiac inflatable boat. With the short runs to the dive site and easy entry afforded by the inflatable boat, these are particularly well-suited to Theo and Hannie's operation. The tanks are 70

and 80 cubic foot steel models with European valves adapted to fit American regulators. At present there are only 22 in service owing primarily to the Smit's desire to keep their groups small and personalized. While they may handle 15 to 18 divers, it will be in small groups of five to six and each group will be guided. The diving with Poseidon Nemrod is a bit more aggressive in terms of number of dives per day possible than is typical of Negril, for example. With Theo and Hannie you can dive before breakfast, take another dive before lunch, do an afternoon dive, and stamina and decompression limits permitting, even do a night dive. But, the wind tends to kick up more in the afternoon and the most predictable diving will occur in the mornings.

Montego Bay, like Ocho Rios and the north shore, is not afforded the protection from winds that Negril is. Consequently, the summer months provide the most predictable sea conditions as well as the best visibility. These areas are compensated though by some world class diving locales and the Montego Bay area has some of the best.

The deep reef offshore Chalet Caribe is an example of the very fine diving possible. After a short (seven minute) boat ride to the site, we dropped into a gigantic sand arena with high profile coral all about. The coral was perforated by numerous crevices profusely adorned with

gorgonians, black coral and sponges of all shapes and sizes. There are spectacular photographic opportunities throughout this reef area, and even more so as you follow along to the vertical wall. Pelagic species of fish cruise the blue water seaward of the wall and baitfish withdraw to the protection of the coral recesses. The day we dove this area the visibility was only 40-50 feet owing to winter storm activity, but there was no surge at depth and it was a spectacular dive despite marginal visibility. To dive this area with the 150 foot visibility common in the summer months must be truly exciting.

Other dive sites near Montego Bay include:

Old Airport Reef. This is a large reef complex off Montego Bay Point deriving its name from its proximity to the airport. Tunnels and canyons are common throughout the reef and ample quantities of tropical fish reside there. Depths for the most part are in the 25-35 foot range with coral heads rising to within two feet of the surface in some areas.

Point Reef. Also off Montego Bay Reef, Point Reef is a wall beginning at 65 feet and dropping vertically to approximately 300 feet. Gorgonians and black coral intersperse with abundant sponges.

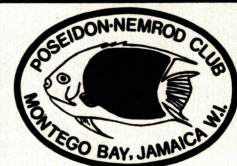
Giant Pillar Coral Reef. Massive heads of pillar coral are the highlight of this shallow reef (20-25 feet), but healthy

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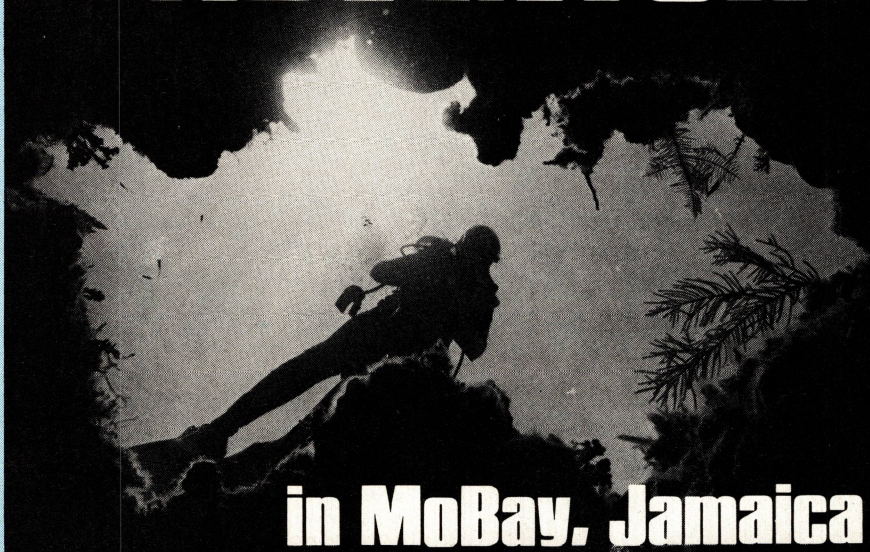
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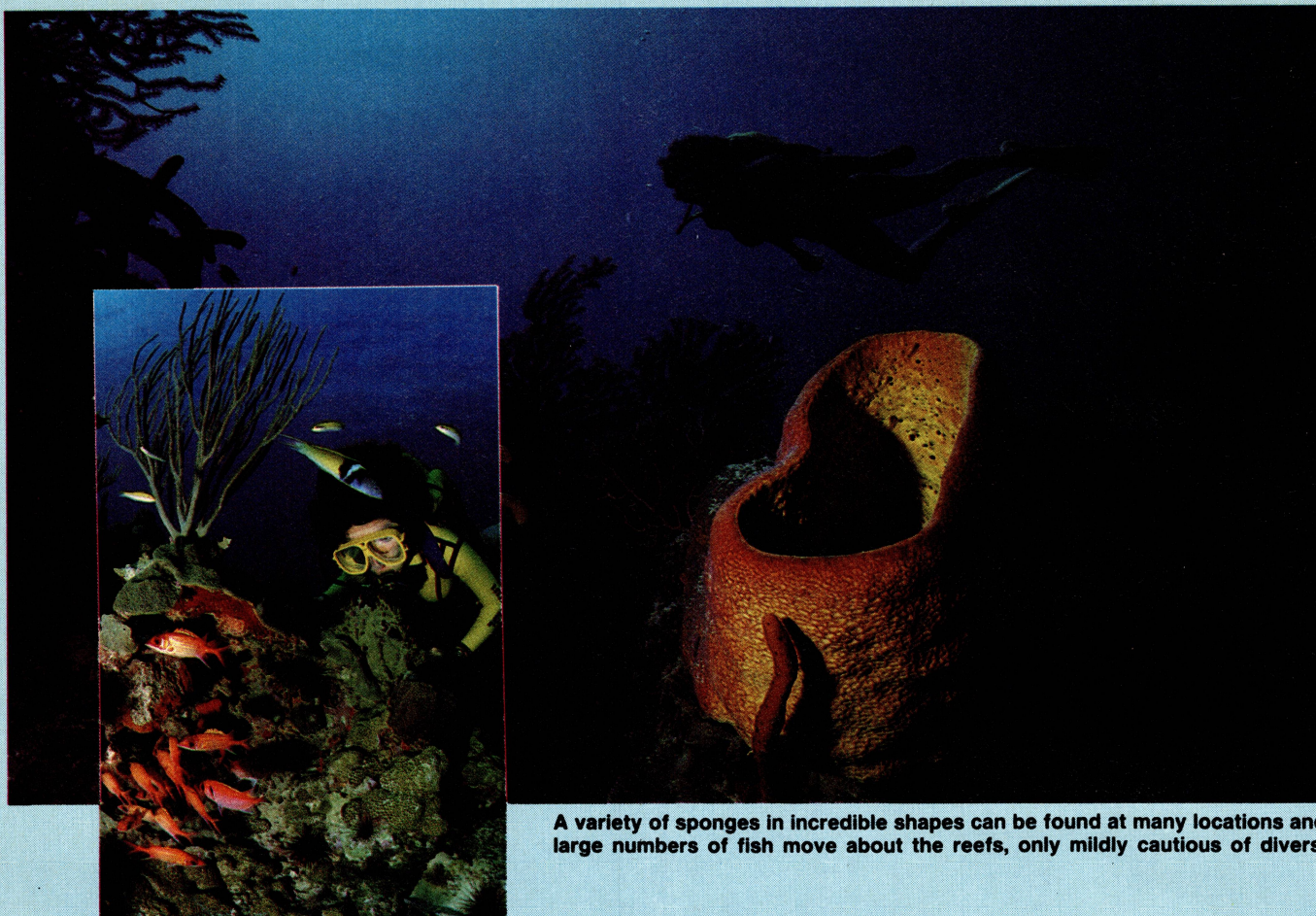
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A variety of sponges in incredible shapes can be found at many locations and large numbers of fish move about the reefs, only mildly cautious of divers.

populations of high profile coral add considerable visual appeal.

Canyon and Chimney. This is one of the few fishfeeding stations established in Jamaica. Theo and Hannie have been working with resident fish populations to make them more trusting of divers, and therefore easier to approach for observation and photography. The maximum depth here is about 70 feet so bottom time is adequate.

In addition to these specific dive sites, there is a more or less continuous reef along the entire coastal area of Montego Bay. Winter visibility is generally 40 to 60 feet, but the visibility often exceeds 100

feet in the summer. There is a lot to see in the waters offshore Montego Bay, and Poseidon Nemrod will certainly show you the best of it. In addition, there are several new operations that began diving programs in January. The Caribbe Beach Hotel is the site of Seaworld Resorts Ltd., an ambitious watersports program offered by Roy Watkin, a Jamaican whose family business is the Blue Danube Tour lines. The hotel is a 15-room property and is intended to cater largely to the diver trade. The boats are being renovated to better handle divers and the compressor and peripheral dive rental gear is on premises. The Holiday Inn and Half Moon

resorts are also establishing Scuba Jamaica, a further indication of the commitment the Jamaican tourist industry is giving the traveling diver.

Falmouth

Falmouth was once the largest banana port in the Caribbean, but now the signs of that flourishing industry have fallen to decay. The sheds and warehouses are crumbling and overgrown and the primary non-tourist industry remaining is batik fabric printing. Don't be misled by this seeming lack of activity however, for Falmouth is also the home of the opulent Trelawny Beach Hotel.

The Trelawny has incorporated an interesting approach to many of the activities sought by the vacationer, including watersports—they are free (in a way). The hotel has horseback riding, tennis, water-skiing, snorkeling, scuba diving and even resort course instruction available at no additional charge.

Tojo Watersports, under the direction of Steve McClure, conducted over 3000

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resort courses last year and as a result turned many, many beginners onto the beauty of diving. The chief instructor is a personable young man named Alex Kirkbride and his PADI sanctioned program must be running about as many resort courses as are conducted anywhere.

One free dive per day is allowed as part of the package but additional five or ten dive packages may be purchased from Tojo. You can't buy individual dives, only packages, and one night dive is included in either package. Generally, one dive will be conducted from the Trelawny and a second dive at a selected site between the Trelawny and Ocho Rios. Three dives per day are possible.

Steve McClure is an interesting personality and his involvement in the Jamaican dive industry is typical of what is happening with businessmen throughout Jamaica. Steve was born and raised in Jamaica, but as the climate became inhospitable for free enterprise, he emigrated to Antigua where he operated as a watersports concessionaire, much as he does at Trelawny today. As things began to look better in Jamaica after the 1980 elections, Steve and his partner, John Wright, returned to Jamaica. John and Steve are also partners in the Free Spirit Watersports concession in Ocho Rios.

Tojo maintains three boats in the 22 to 34 foot range. Their primary boat is a very stable 34 foot custom fiberglass

boat with convenient center tank racks and outboard engines. The staff consists of one instructor and six PADI dive-masters, as well as boat handlers and mechanics. The hotel is a beautiful property with excellent food, and Steve does a fine job with his watersports program. The hotel does a large traffic in honeymoon packages, but I expect this segment of their business will soon be rivaled by the dive packages booked.

Priory

As we travel down the road toward Ocho Rios, we enter Priory, the home of one of Jamaica's dive industry institutions, Edgar Ross. Edgar maintains a small resort called the Columbus Beach Cottages and his Island Dive Shop is a part of this establishment. Born and raised in Jamaica, Edgar has devoted the last 12 years of his life to the dive industry on the island and has seen many changes. From 1976-1980 business was extremely slow and he began catering to colleges and their marine science programs. Now he has established a sizable following among the educational community and his marine laboratory is doing very well. Generally the students will come down with a professor and a couple of assistants to learn about the sea from the sea. Having a colorful, personable, old salt like Edgar around to tell

tales of Jamaican history and the pirate days must combine for a memorable experience. Of course, sport divers may also book into the Columbus Beach Cottages, and in fact, they comprise some 40 percent of Edgar's clientele.

Runaway Bay

Runaway Bay derives its name from the contention that a Spanish general and his troops hid out there when running from the conquering English. Appropriately enough, today there is a wonderful diver's hideaway in the same spot and it is named Club Caribbean.

Club Caribbean provides guest accommodations in 116 unique bungalows directly fronting the ocean. These are very comfortable; there is a cooling sea breeze and the melodious sound of the surf at night. There is a fine restaurant, bar, disco, pool and gift shop, as well as the only retail dive shop on the island. Waterskiing, sailboats, glassbottom boats and boardsailing are also available from the watersports concession, but the big activity at Club Caribbean is diving.

Sundivers of Runaway Bay is under the direction of Craig Larson, a former merchant in precious metals who went to Cayman on business and discovered a love for diving. He came to Jamaica on a vacation and his business involvement occurred through a series of fortuitous in-

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cidents. Now he has a flourishing dive operation. Craig attributes the fact he is running large numbers of divers to a combination of service and very inexpensive package prices with the hotel. Diving is done from Zodiac inflatables and like so many places in Jamaica, none of the dive sites are more than 10 to 20 minutes from the beach. At present Craig is able to handle about 80 divers divided into small groups, but hopes to be able to gear up to accommodate 100 in the near future. The potential for a fine, continuing dive resort program exists and Sundivers and Club Caribbean have collaborated on a fine diving package to date.

One of the finer dives we made in Jamaica was a reef in near proximity to the Club Caribbean called **Ricky's Reef**. Here we anchored in about 55 feet of water and dropped to about 110 feet to photograph some exquisite azure vase sponges and large tube sponges. Schools of skittish baitfish patrolled this reef, as well as an abundance of small tropicals, particularly blue chromis. There were a series of caves at 130 feet which were very enticing, but JADO shops prefer their guests not dive much below 100 feet so we tried to honor that. Besides, bottom time is limited at 130 feet and I was content where we were.

Later that afternoon we made a second dive along a shallow wall and ran into a huge free-swimming green moray. We

couldn't approach it properly for photographic purposes, but it was exciting to see regardless. I got the feeling that there is consistently fine diving throughout the Runaway Bay area, although our limited schedule did not permit us to sample it more thoroughly.

Ocho Rios

Literally translated from the Spanish, Ocho Rios means eight rivers, and the effects of ample freshwater are readily apparent in this lush and vibrant vacationer's paradise. Dunn's River Falls is a spectacular 600 foot cascade of water with rocks for climbing and remarkable subject matter for photography. The hill-sides above Ocho Rios abound with rich, verdant farmlands, and Fern Gully roadway winds through three miles of beautiful green forest canopy. Everywhere you turn in the Ocho Rios area, there are startling sights of topside beauty. It is no wonder the tourist industry is so well developed in Ocho Rios with fine hotels and a proliferation of excellent restaurants. Fortunately for the diving tourist, the terrain underwater is also quite remarkable.

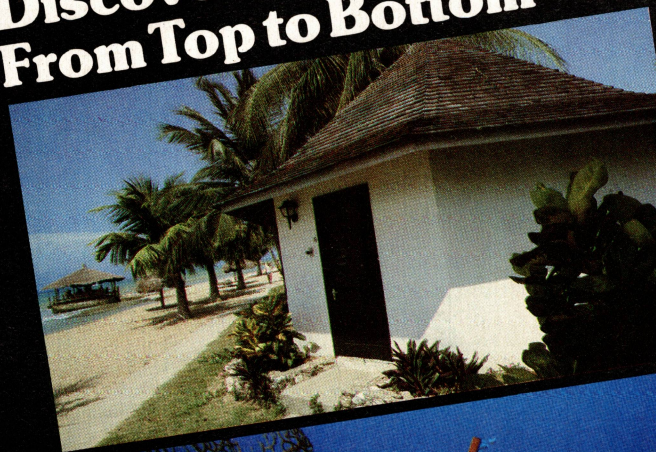
The two primary dive operators in the Ocho Rios area are Mike Drakulich, with his aquatic clubs based both at the Jamaica Hilton and the Shaw Park Hotel, and John Wright, with Free Spirit watersports at the Ocho Rios Sheraton Hotel.

Sea and Dive Jamaica, Ltd. is the technical name of Mike Drakulich's successful dive operation in the Ocho Rios area. He came to Jamaica several years ago after a short stint in New York City politics and the serenity of an island lifestyle attracted him. Today it seems he must be as busy as when he worked as an aide for Mayor Lindsay, but apparently he has no trouble rationalizing the hectic pace.

Louis Ritch is his Jamaican dive guide, recently certified by NASDS as an instructor and primarily in charge of the Shaw Park Hotel operation. Both hotels are served by Mike's fleet of dive boats, the flagship being his 40 foot Lindsay, *Jamaican Queen*. In addition, there are two deep-V, 24 footers and one 30 foot vessel which are powered by outboards. This fleet will permit Mike to handle 65 divers at one time. Lodging packages are available through the Hilton, Shaw Park and the villas adjacent to Mike's home. In good weather with the Dive Villa program, guests can be picked up at the beach in front of the property, but when the surf is rolling other arrangements will be necessary.

John Wright and Christine McClure (remember Steve McClure from Trelawny?) are primarily involved in running the dive program from the Free Spirit out of the Ocho Rios Sheraton, although Alex Kirkbride is very important to the dive program at both Trelawny and the Sheraton.

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There is some interchange of personnel with the Trelawny Hotel operation (Tojo) as well, since both businesses are jointly owned and close enough for this trade-off of personnel and materials to be practical. They have the feel of totally independent operations though and each has its own discernible flavor. The dive-masters for Free Spirit have undertaken an extensive reef exploration program, so that even though they are newcomers to the Ocho Rios area, they still know where to find the good diving. We dove with Sea and Dive Jamaica on one day, and Free Spirit the next, and in neither instance were we disappointed by either the quality of the diving or the professionalism of the dive operator.

The boats in use by Free Spirit include a 38 foot cruiser which can accommodate 20 divers and a custom fiberglass deep-V hulled boat which can also handle 20. In addition, there is a wooden glass-bottomed boat which we used for our small group and found very satisfactory. There was a freshwater rinse bucket on board for the camera gear and the wood covering for the viewing ports made an excellent table for changing film. The boat wasn't very fast, but then in Ocho Rios you don't generally have to go far. John, Christine and the dive guides were all very personable, but then I can't remember a rude attitude by any of the people we did business with on this tour of Jamaica.

Some of the more spectacular dives in the Ocho Rios area include:

Top of the Mountain. A large and friendly green moray eel is a prominent resident of this beautiful coral complex and is usually around a large cave at about 80 feet.

Devil's Reef. A gentle slope falls off to about 100 feet. The reef is characterized by high profile coral heads with massive sponge encrustations. Schools of Atlantic spadefish and ocean triggerfish are frequently seen patrolling the deeper areas of the reef.

Sans Souci. This dive requires a 25 minute boat ride from Ocho Rios, but Nigel Andrade's Watersports facility at the Sans Souci Hotel will feature a shorter run to this particular reef. This is particularly interesting for its continuous series of caverns and archways.

Prospect Reef. This is a very nice shallow dive in 40-50 feet of water. Smaller reef tropicals are prevalent, as is a healthy sponge population.

Robins Bay

Strawberry Fields, on Robins Bay, parish of St. Mary, is in a 20 acre tropical setting that has been designed with the scuba enthusiast in mind. Besides a romantic and private crescent shaped beach and a sunken shipwreck 100 feet from shore, Strawberry Fields has its own dive shop with a full complement of tanks, weights, regulators and other nec-

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essary gear. A Mako system is already in place with a second back-up compressor scheduled to be added in the near future.

"The dive facility is easily accessible to the beach," stated Fred Del Pozzo, director of Sunseeker Holidays and one of the principal owners of Strawberry Fields. "We plan to offer a seasonal service June 1 through October 31 in order to take advantage of the excellent dive conditions which occur during that time.

"A fully certified PADI instructor couple will supervise the dive program. PADI certification and resort courses will also be offered," he added.

Divers at Strawberry Fields can explore over 20 separate dream-like dives. These include: **Little Drop-Off, Conch Bed, Yellowbrick Road, and Strawberry Wall.**

Strawberry Wall is an underwater photographer's dream. Soft corals are abundant. The massive brain and elkhorn corals seem to go on forever.

Vacations at Strawberry Fields are available in popularly priced eight day/ seven night packages which include a welcome rum punch party, accommodation in rustic cottages, central bath facilities, full American Plan (three meals per day) served at the two open air dining pavilions, 12 escorted dives (including one night and one beach dive), use of boats, tanks, weights and dive guide.

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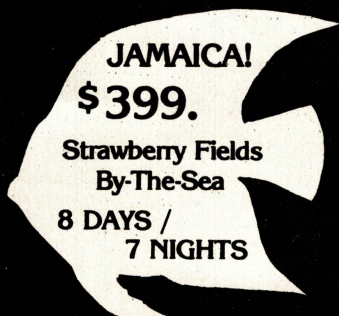
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in the United States and Canada. Besides Air Jamaica, American Airways, Air Canada, Eastern, BWIA, ALM (from Curacao), Cubana, British Airways, and Cayman Airways fly routes on a regular basis. No passports or visas are required for visits of less than six months' duration provided proof of citizenship and a return ticket are on hand. The country is obviously committed to making the tourist feel welcome. And, it's not just the government. The people want prosperity and see a thriving tourist economy as a means to that end. I know I was treated well during my stay on the island, and will look forward to my next opportunity to, "Make it Jamaica. Again." >

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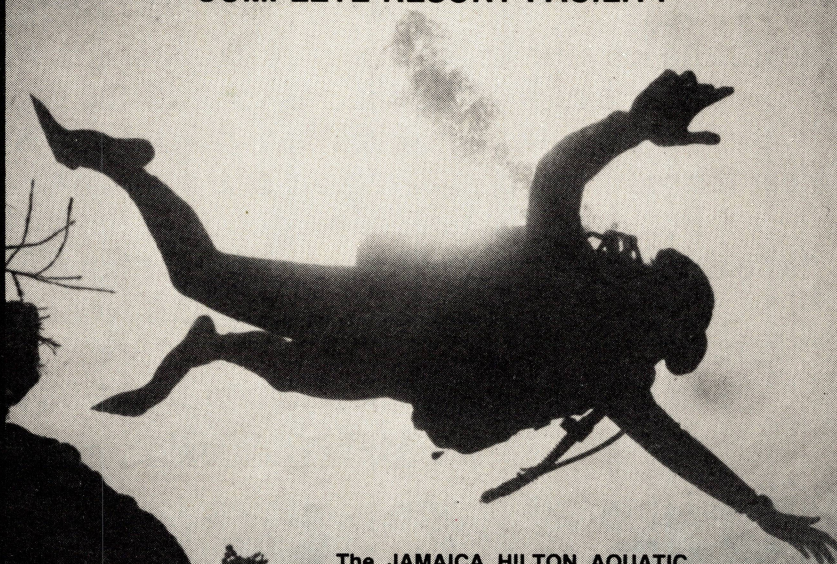
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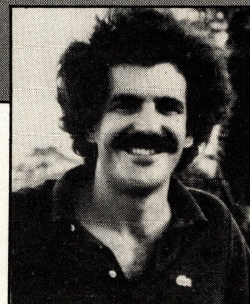
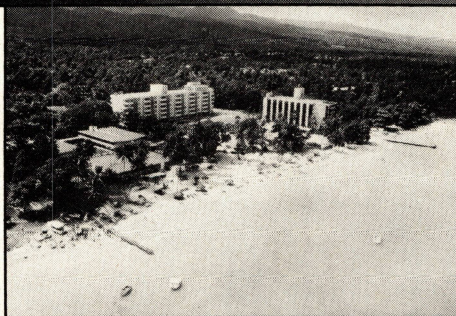
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EDMONDS WRECK

(Continued from Page 39)

steel, this thriving community lay otherwise unseen and undisturbed until the advent of scuba diving as a cold water sport. Looking at the wreck now, it is apparent that this is one human intrusion nature has turned to her own purpose. What was once an artifact of man now belongs to the sea.

The end of the wreck we're making for is open, revealing a chamber roughly ten feet across, crisscrossed by a network of



Many animals, especially anemones, have taken up residence on the wreckage.

steel beams. Numerous rockfish hang suspended about the opening like small satellites to a mother planet. They drift lazily out of our way as we approach. Many more hover within the shelter of the *Metridium*-choked corridors.

Inside, a cabezon darts from its resting place on the silt covered floor directly in front of us. These large fish often lie about in the open, relying on their coloration for camouflage. Approached within two or three feet, they explode into flight like grouse.

As we enter the wreck, I experience the mild thrill of anxiety I often feel upon going into an enclosed space underwater. I am reminded that others before me have drowned on this same dive. Owing mostly to inexperience and strong tidal currents, those deaths played no small part in arousing public interest in regulating the use of the wreck. Taking the initiative, the local diving community approached the city with a proposal that the wreck be made a park and preserve.

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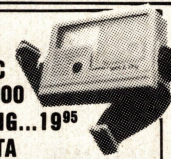
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In 1970 the city of Edmonds officially designated the wreck as a municipal underwater park, probably the first city on the West Coast to create such a facility. All divers must now dive with a buddy, wear a buoyancy compensator and be certified by a nationally recognized agency. Marker buoys delineate the park boundaries, inside which boating traffic is prohibited. Resting floats moored nearby provide tired divers some sanctuary as well as a reference point in locating it.

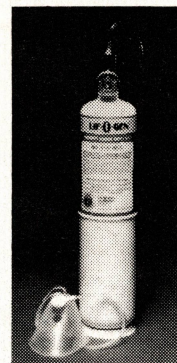
In 1971 the park was recognized by the State of Washington as a marine preserve. It is now illegal to kill or remove marine life or destroy habitat within the park boundaries. This protection encourages the large fish population found here today. It has become an important spawning ground and now, in the spring, the profusion of life is overflowing.

Totaling about 100 feet in length, the interior of the wreck is divided by bulkheads into 20 or 30 foot corridors. When we get to the end of this one, we must exit upward through the rafters. As I come up between two beams, I see a red Irish lord lying motionless among the seaweed on the next beam over. I try not to startle it so Terry can see it when she comes up. We have learned we must take our time and be observant underwater, for many creatures, like the cabezon, are so well camouflaged that we easily overlook them. Preferring not to disturb them, we must be careful where we put our hands and feet.

Each compartment has something of interest. Sea stars, cucumbers and crabs make their unobtrusive way over beams and walls encrusted with algae, tube worms, sponge and scallops. Rockfish drift in and out or lie along beams resting.

After a leisurely tour through the wreck, we turn to explore the *Alitak*, an old wooden steam tug, sunk in 1972 to enhance the park. A school of pile perch dances among the kelp growing from her topsides. Amidships, a male kelp greenling circles us restlessly; we must be trespassing. The tug's rotting timbers, rusty boilers and twisted mass of heavy cable offer myriad places of concealment for cabezon, rockfish and Irish lord.

The east end of *Alitak* deteriorates into a pile of rubble. Shoreward, mangled and decaying pieces lie scattered across the bottom. Each twisted sculpture of rusting steel, each rotting timber, is a home for hundreds of organisms, and the hunting grounds for many more. Among this litter we find a small cabezon resting vertically against a stump of wood. As we approach, it swims aggressively toward us, circles warily and returns to the same stump. The reason for this unusual behavior is a large pink mass of eggs attached to the timber. While the cabezon makes another pass at us, a striped sea perch tries to move in for a quick bite of caviar. The cabezon darts back in time to chase it away, but the perch lingers,



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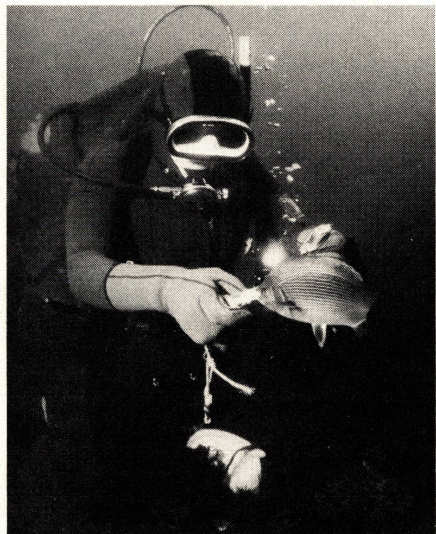
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undeterred, just out of range. Obviously our presence only compounds this poor fish's problems so we retire.

Leaving the *Alitak* behind us, we continue toward shore. In 15 feet of water we reach the first beds of eel grass and glide over them like giant birds skimming the roof of a Lilliputian forest. Clinging to blades of grass here and there are snails, limpets, small crabs, nudibranchs, even tiny anemones. Feeding perch and sole also populate this miniature forest. Terry points to a little eel-like fish about eight inches long, a pen-point gunnel. It is a beautiful green color, blending perfectly with the vegetation.

I have been watching my pressure gauge. It now reads 300 pounds. Reluctantly, I signal Terry it's time to go up. We are in less than 15 feet of water, so it doesn't take long. Suddenly the dive is over. On the surface we inflate our buoyancy compensators and talk about all the things, like the gunnel, that we could only point to and nod about underwater.

The Edmonds Wreck is one of our favorite dives. Its unique three-dimensionality affords the diver a heightened sense of adventure and physical involvement with the underwater environment. As a wildlife sanctuary, it ensures an opportunity to become acquainted first hand with a broad spectrum of the area's subaquatic inhabitants, many of which are hard to

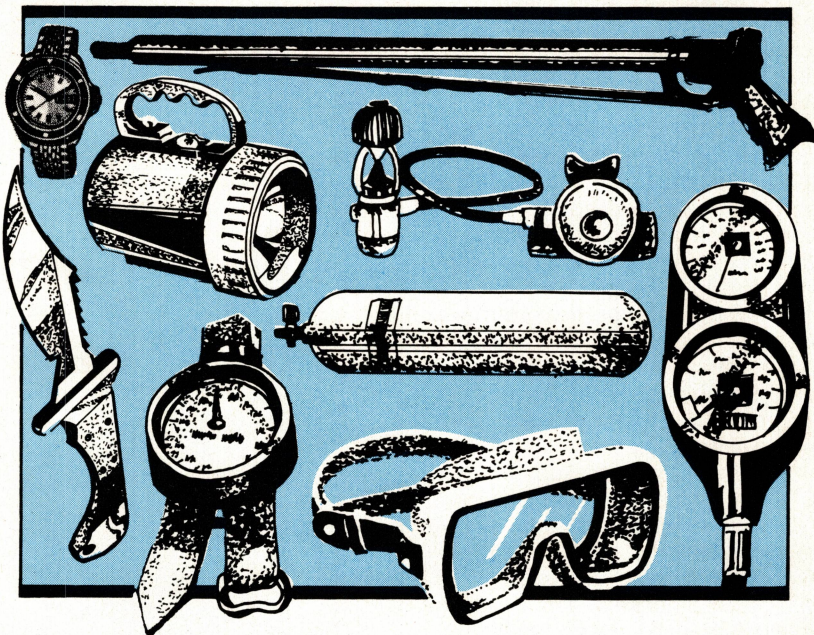


While some fish might disdain a free hand-out, others accept this diver's tidbit.

approach or even find where spearfishing is allowed. Its accessibility makes such an experience available to divers who can't reach more remote dive sites on a regular basis. Finally, the parking, changing and restroom facilities provided by the city make the dive one which can be enjoyed year-round. For underwater photographers, such as ourselves, having all these features rolled into one dive is especially appreciated. Edmonds can be proud of her unique recreational facility and its contribution toward the conservation of our marine resources. 

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Divers Institute of Technology

Imagine a field which is lucrative, exciting, challenging, and never routine. One which offers an individual the opportunity to set his eyes on an alien world covering nearly six billion acres of continental shelf, of which 78 percent has yet to be explored. I'm talking about the world of deep sea commercial diving. A visit to the Divers Institute of Technology (DIT) in Seattle, Washington is not only a step into this world, it is a step into the future. The students' college is a group of barges; their classroom is the sea.

June 1983 will mark the 15th year the Divers Institute of Technology has trained men and women to work in this challenging field. On the shore of Seattle's Ship Canal, DIT was the first commercial diving school to be accredited by the Accrediting Commission of the National Association of Trade and Technical Schools (NATTS) nearly 10 years ago. Despite being one of the younger schools, DIT has collected a large assortment of credentials. Although these may not initially mean much to the average applicant, they are important vehicles in gaining government sponsorship through loans and grants. Accreditation indicates that DIT has attained and is maintaining high educational standards and ethical business practices.

DIT accepts students as young as 18 (17 with parental consent) and also non-high school graduates who show they have the ability to benefit from the training. One popular misconception about enrolling in a commercial deep sea diving school is that you must be a certified scuba diver prior to enrollment. No prior diving experience is required, however, the student must be in good health, possess good mechanical ability, be agile and work well with his hands; and be a good swimmer. The average DIT student is 23.5 years old and has 13.5 years of formal education.

President John Manlove, a veteran Navy diver, who established DIT in 1968, stressed that the requirements of the industry are constantly changing so his staff must meet regularly with industry advisors in order to provide an up-to-date, relevant course curriculum. DIT students receive training in all facets of the dive industry but Manlove emphasized that the school's training program does not overemphasize the oil industry at the expense of other potential job fields.

In addition to the oil industry, a commercial deep sea diver can also find employment on aquaculture projects, chemical and treatment plants and repair/inspection work on dams, to mention a few. A beginning tender can make anywhere from \$15,000 to \$20,000 yearly. Beginning divers earn between \$20,000 and \$35,000 per year. A diver with two to five

A DEEP STEP INTO THE FUTURE

BY A.F. STAR



years of experience falls in the \$25,000-\$50,000 bracket annually. The next classification for deep sea commercial divers is that of supervisor. A supervisor's salary can range anywhere from \$35,000 to \$80,000 per year. At the top of the pay scale are the saturation divers. These experienced individuals earn between \$65,000 and \$100,000 per year. Note: these salaries are based only on 150-180 days of offshore work. The financial reward is certainly a prime motivator behind most of the students presently enrolled at DIT.

"We just can't turn out our graduates fast enough," Manlove says, "and most of them can get back the investment they pay in tuition fees in a couple of months after they land a job." And, where do the students come from? From all over the world and virtually every state in the nation. To accommodate ever increasing enrollments, DIT has had to expand its plant and facilities several times in the past few years.

And, why are enrollments increasing? Manlove admits that the growing demand for divers is one factor but there are several other reasons he pointed out. He be-

lives that DIT is the only commercial diving school that trains its students in actual dives to depths of 200 feet. The confidence gained from this experience is unequaled. And, DIT's training site is unique: the water is cold and murky and the visibility is poor; the same environment which exists in the working industry. Another reason is the excellent reputation that DIT enjoys within the commercial diving industry. "Our statistics reveal that almost half of the students who enrolled in 1982 did so because of our reputation."

A few of the recent improvements and expansions of DIT facilities include a new 640 square foot shower-changing area and locker room facility with modern ventilated lockers to accommodate 96 students. Over 3600 square feet of office, classroom and shop space has been added in the last three years and another 2100 square feet will be added in the immediate future. The most impressive additions to the DIT fleet are a new deep sea diving barge and an LCM-3 landing craft, similar to the landing craft used in the invasion of Normandy in World War II. The 20 x 46 foot deep sea diving barge is equipped to support divers on air and mixed gas dives in open water in accordance with Coast Guard Commercial Diving Standards. Major items of support equipment on board are: a double lock recompression chamber, 120 cfm compressor, life support system, mixed gas console, first aid and life saving equipment, gas bottle banks and double drum winch. The deep sea diving barge is undergoing certification by the Coast Guard and will be licensed as a Passenger Barge for Hire for up to 30 passengers. This new barge also transports DIT students into Lake Washington where they undergo two weeks of diving training to depths of 200 feet.

The faculty of DIT includes nine full-time instructors. Each has vast knowledge and experience in diving and most of them have prior Navy diving/instructor experience, with expertise in one or more specialized areas. For example, Sylvester Wilson, DIT's director of training, specializes in saturation diving. He was awarded a Meritorious Unit Commendation in 1972 while engaged in the eminently successful operations of the U.S. Navy deep dive system, Mark 2, Mod 0, which attained an unprecedented open sea world record dive (at that time) to a depth of 1010 feet, demonstrating man's ability to live and perform useful work in the deep ocean through the employment of saturation diving techniques.

Students at DIT receive training in ship repair and salvage, underwater burning and welding, demolition and explosives, harbor clearing and industrial first aid (including CPR) as well as all phases of

mixed gas diving. The heady world of saturation diving at DIT includes practical skills in saturation protocol, saturation theory as it applies to semiclosed and closed circuit scuba, as well as bell diving. Other subjects include diving signals, diving physics and physiology, prevention and treatment of dive accidents and diseases, seamanship, underwater photography, oil field terminology, hot water systems, pneumatic and hydraulic tools, basic blueprint reading, scuba instructor certification and underwater TV and video recording. Another important area of training at DIT is safety. Proper safety procedures are taught throughout the entire course.

Unlike a college or university where students normally have a chance of starting only once a year, DIT starts a class every five weeks. The total program is six months in duration and as a result, there are at least five separate classes in session at all times. Each of the five is in a different phase of training so the classes are fairly small (18 to 25 students) and individual tutoring is available if required.

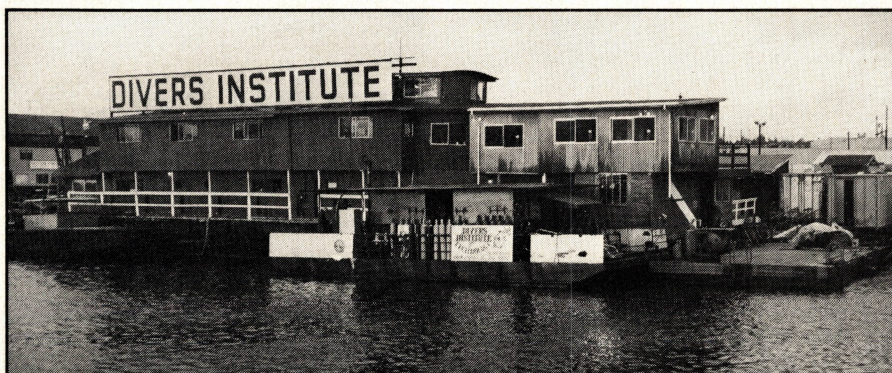
Students begin their training at the institute with two weeks of classroom theory, before entering the water for an initial week of underwater instruction. First they use the U.S. Navy's heavyweight Mark V

job done, no questions asked.

In the two year period from March 1979 to February 1981, a total of 360 students enrolled at DIT. Of these, 322 graduated. This computes into an 89 percent completion rate. Seventy-seven percent of the graduates responded to a follow-up questionnaire concerning their subsequent employment. Of the 249 returns, a total of 93 percent reported they were working; 85 percent responded that they had jobs in the commercial diving industry while 4 percent were working in a closely related field.

Other than your reputation, are there any other reasons why students enroll to become commercial divers, I asked Manlove? "The students here are looking for a challenge and a job where self-reliance is important—nobody's looking over your shoulder when you're down diving—you have to be able to do it on your own," Manlove answered. He believes that some of the younger students are drawn by the so-called glamour of commercial diving. The older ones, the guys in their late 20's and 30's, are mostly people discontented with their present occupations. Most have been around and want a bigger challenge in their careers.

But don't be misled, the road isn't always a smooth one—commercial diving



Divers Institute of Technology is on the shore of the Ship Canal in Seattle, Washington. DIT's deep sea diving barge is equipped to support divers on air and mixed gas dives in open water in accordance with Coast Guard Commercial Diving Standards.

photos/courtesy DIT

deep sea outfit, a bulky, traditional full-length diving suit with heavy belt and brass fittings, topped by a round, spun-copper helmet. From this 150 pound diving outfit, they move on to the latest state-of-the-art underwater hardhats—modern plastic shell helmets that cost about \$2,000 each.

And, this is one reason why DIT graduates are in demand—the extensive training that they receive. Commercial divers travel around the world, often arriving in a remote location to find they have to work with older types of equipment. "We try to get across to each student that it will often be a make-do situation," Manlove says. "We want them to be able to say, 'Yes, sir,' and do the job safely no matter how difficult the situation." DIT graduates show up for work and get the

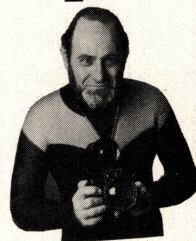
can be everything that most people try to avoid in life—dirty, tiring, dangerous, and with long separations from home. But, those who stick it out and use good working skills have an excellent future.

Since the time offshore drilling developed in the 1950's, divers have become essential in the exploration and construction of offshore facilities, and in the maintenance and repair of these facilities. Commercial diving is so important to the oil industry that the offshore industry itself could not have developed and could not exist today without the support of the diving community.

If you're looking for a challenge, send for DIT's catalog—Divers Institute of Technology, Inc., 4601 Shilshole Avenue, N.W., P.O. Box 70312, Attn: SDMS, Seattle, WA 98107. ☐

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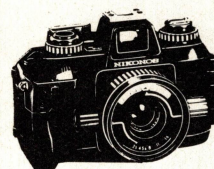
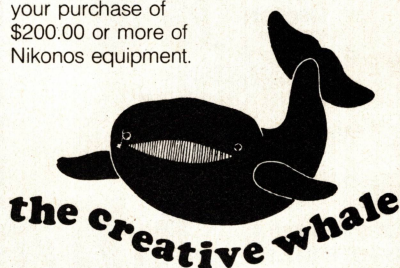


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CDC ORIENTATION PROGRAM

For the 13th year, Commercial Diving Center will offer its Orientation to Commercial Diving (OCD) to area sport divers. OCD is a half day program held on Saturday or Sunday. The program features an overview of commercial diving through the use of a short information lecture, films, and a question and answer period. Each person attending the program has the opportunity to dive in commercial lightweight operational gear and make a dive in a hyperbaric chamber. The program coordinator and instructor-in-charge is Tommy Thompson.

The 1983 OCD schedule has been prearranged so that scuba field trip planners can assure their groups of guaranteed reservations in booking long range events. The cost is \$15 per individual with a minimum of 13 participants required. For further information, interested persons can phone Jack Dempsey at (213) 834-2501. Individuals over 18 years of age who are not members of organized dive groups are also invited to attend the programs. Open dates will be given by calling the above number.

WEDDING RING FOUND

A 14 karat gold wedding band was found recently by a SKIN DIVER reader while diving on the *Mitzpah* wreck off West Palm Beach, Florida. The diver, Robin Harris, wishes to find the owner and return the ring—no reward expected.

To properly identify the owner Harris has supplied initials engraved on the inside of the ring, along with a date: D.K.P.—W.A.C. 9—79. The owner must supply the missing day. Contact: Robin Harris, 11013 Airview Dr., Tampa, Florida 33624.

OSHA DIVER EXEMPTIONS

After six years of work by members of the American Academy of Underwater Sciences and the Occupational Safety and Health Administration, an exemption for educational/scientific divers to the federal regulations covering commercial divers (29 CFR Part 1910) has been granted. To operate under the exemption OSHA requires that, "Scientific diving be under the direction and control of a diving program utilizing a diving safety manual and a diving control board meeting certain specified criteria."

The text of the exemption is contained in the Federal Register, Vol. 47, No. 228, Friday November 26, 1982, Rules and Regulations, pages 53357 to 53365. Those requiring more information should contact the Secretary of the AAUS, Phillip Sharkey, at the Graduate School of Oceanography, Narragansett, Rhode Island, 02882.

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Interested divers should inquire at their nearest PADI Training Facility or contact the PADI International College, 1310 Rosecrans Street, San Diego, California 92106.

PADI SCUBA REVIEW MATERIALS

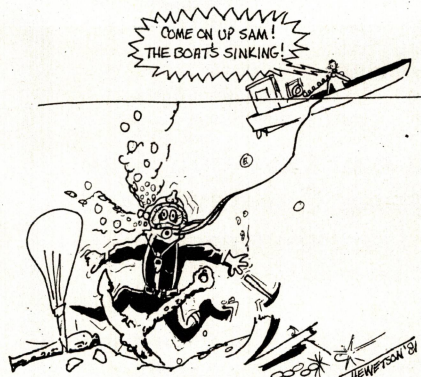
The PADI Scuba Review program, a comprehensive refresher course, is now completely supported by an integrated package of materials—the Scuba Review self-study workbook, final exam, registration envelope and certification card decals. The entire package of materials is available as a single unit, although the workbook may also be purchased separately. The program provides divers with a convenient way to renew and upgrade their diving knowledge and skills.

More information on the PADI Scuba Review program is available from PADI, 1243 East Warner Avenue, Santa Ana, CA 92705, or from your local PADI Training Facility.

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Cayman

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A Caribbean diver's paradise that's in a class by itself is the only way to describe this fabulous resort. Just minutes from George Town and Seven Mile Beach, you are treated to world-class diving on the North Wall. State-of-the-art dive center, photography and instruction make this the best that Cayman has to offer.

Roatan

Anthony's Key Resort

Roatan, one of the Bay Islands of Honduras, is a tropical paradise reminiscent of an earlier Caribbean era. Anthony's Key, looking more like an island plantation than a resort, provides cottages with comfort, privacy and delightful view. Virgin blue water from the Gulf-stream trench, two miles deep, is propelled over the 30-mile barrier reef, and proves the ideal location for Peter Hughes' DIVE ROATAN.

Bahamas

Riding Rock Inn

Friendly marine life, good visibility, beautifully preserved reefs and Island Divers have made this one of the most popular Bahama diver destinations. Two hours from Ft. Lauderdale, Riding Rock is a cozy beachfront resort with 24 rooms. The U/W Photo Center is regarded as the finest in the world.

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Bahamas

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Fashioned from a Bahamian estate this resort is perched on a hillside with a beautiful view of Harbour Island's magnificent bay. This idyllic island, a short distance from N. Eleuthera, offers watersports activities, including sailing, fishing and skiing. Surrounded by more than 30 different dive sites, it is considered to be extensive and diverse.

Bonaire

Flamingo Beach Hotel

This 110-room resort hotel, a few minutes from the airport, a short stroll to town is the home of Peter Hughes' DIVE BONAIRE. More than 40 dive sites, plus Bonaire's incredible beach diving. Underwater photo course and developing. Afterwards, relax in the fresh-water pool or jacuzzi.

Cozumel

La Ceiba Beach Hotel

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Turks & Caicos

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Bahamas

South Ocean Beach

Located only a few miles outside the hustle and bustle of Nassau on the south shore, this top-rated resort faces Bahamas 4000 meter deep Tongue of the Ocean, with a wall that starts at less than 45 feet. The hotel amenities are superb, including dining, tennis, wind surfing, sailing and championship golf course.

Cayman

The Grand Caymanian Holiday Inn

Situated in the heart of Seven Mile Beach, this Holiday Inn Resort is the home of Bob Soto's Diving and Water Sports Center. The 215-room resort is the center of Cayman night life, and merely footsteps to your daily dive boat. The Wreck of the Oro Verde rests offshore in just 50 feet of blue ocean water.

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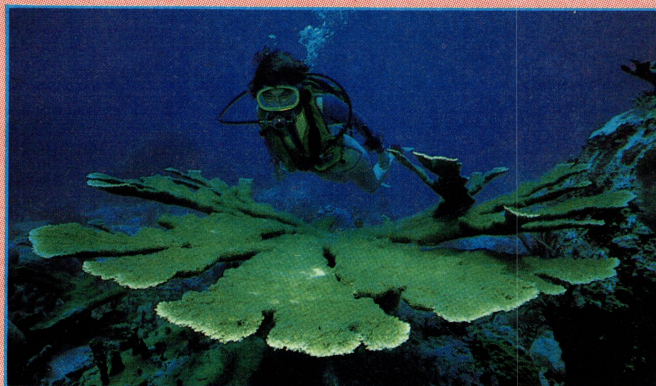
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SDM travel

SECTION



If you're looking for a small, low-key diver's resort where you can combine fine diving with relaxation, try Villa Olga. Near the water's edge, at the west end of St. Thomas Harbor, U.S. Virgin Islands, Villa Olga is away from the daily traffic. However, it's just a ten minute walk from shopping in the picturesque town of Charlotte Amalie.

Upon arrival at Villa Olga, you step from your taxi to a large, shaded front porch, and then to the reception center where you will be greeted by Paula Selby, Pam Balash, Karen Anderson or Joyce or Dick Doumeng, the owners. And, after checking in, you can relax at the Decompression Chamber (a small bar at the end of the porch) with a complimentary rum or fruit punch. If you've forgotten your swimsuit, sunglasses or facemask, these and other items are available at the boutique and retail dive center.

If you have a lot of heavy camera gear, or merely wish to be as close as possible to the dive boat, ask for a lower room (numbers one to four). The view won't be as great as that from an upper room, but you won't have to walk upstairs and the dive boat will be less than 200 feet away. The upper rooms are on a hillside overlooking St. Thomas Harbor and Charlotte Amalie. If you really want to

VILLA OLGA A Diver's Resort Text and photography by Jim & Cathy Church

impress the folks back home, just take a few pictures of the view from the veranda of the highest room!

Breakfast and lunch are served on the shaded porch, which doubles as dining room and general lounge area. The menus feature standard cuisine, such as bacon and eggs and char-broiled burgers, as well as native dishes. Dieters can opt for the Certified Healthy or Scuba salad. Restaurant manager Pat Sims also prepares tasty surprise lunch specials.

Dinner isn't served at Villa Olga, but an excellent Chart House restaurant, with an ocean view, is less than 100 feet away. The Chart House features an enormous salad bar of fruit and vegetables that you can choose to be your total meal. The entrees range from fish to prime ribs of beef, all at reasonable prices. Seven additional restaurants, where you can get anything from a hamburger to French or Italian cuisine, are within a five minute walk from the resort.

The freshwater pool, midway be-

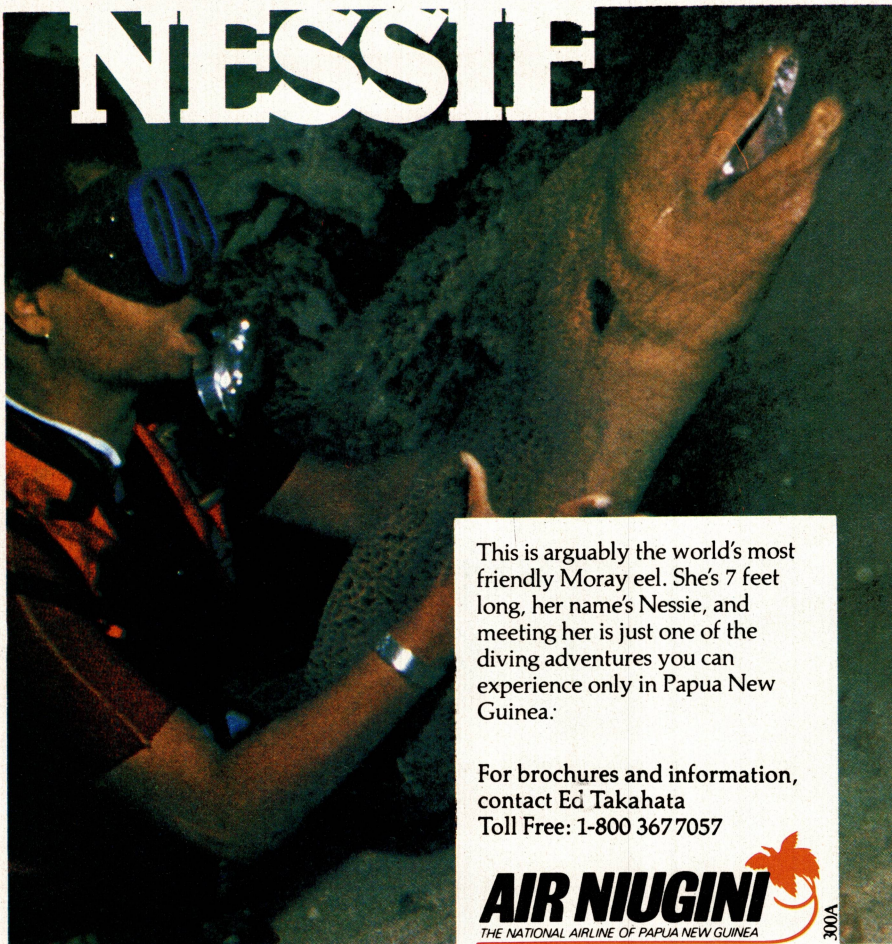
tween the front porch and the upper rooms, is surrounded by decking with lounge chairs for sunning and sipping a cool drink. The pool is also used for scuba instruction and has a covered area at one side where students can sit during poolside instruction. A complimentary pool scuba lesson is available for non-diving guests, and both resort and PADI certification courses are available. Pam Balash, Karen Anderson, Tom Simms and John Dameron are excellent instructors who can provide any level of instruction.

An open-sided, covered classroom is just a few steps below the pool area. It has chairs and a large chalkboard and also houses the resort table tennis setup.

The air-conditioned classroom, just above the pool, is the Caribbean home of the Jim and Cathy Church U/W photography courses conducted each summer during alternate weeks from May to September. Organized groups can arrange in advance with Villa Olga to use this classroom during the other months.

The dive center—which is headquarters for the St. Thomas Diving Club—is about 100 feet from the main resort. It has three structures joined by a common roof: the retail/rental center, shower, locker rooms and com-

NESSIE



This is arguably the world's most friendly Moray eel. She's 7 feet long, her name's Nessie, and meeting her is just one of the diving adventures you can experience only in Papua New Guinea.

For brochures and information, contact Ed Takahata
Toll Free: 1-800 367 7057

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VILLA OLGA

pressor room. Headed by manager Bill Ellis, it is a full-service operation.

St. Thomas Diving Club also has branch dive shops, with compressors and boats, at Bolongo Bay Beach and Tennis Club, and Pineapple Beach Resort. Thus, if you wish to dive a site outside of Villa Olga's dive area, the St. Thomas Dive Club will shuttle you to either the Bolongo Bay or Pineapple Beach branch.

Most of the diving from Villa Olga is done from the 68 foot *Mohawk II*, the flagship of the St. Thomas Diving Club. Captain Jack Laursen and the delightful galley girl, Jo Ann Schmidt, are full-time crew. They are assisted by other Villa Olga staffers, depending on the needs of the trip or charter. We can frankly say that the crew of the *Mohawk II* are competent, friendly people who enjoy helping you have a good trip. We've made 20 trips, with more than 60 nights at sea, and are looking forward to being aboard *Mohawk II* again.

The major advantage of diving from *Mohawk II* is space. You have room to sit, stand or walk around. And, if you have ever spent a day in the cramped confines of a small boat, you will immediately appreciate this spacious craft. For day trips, you have a large upper deck with comfortable lounge chairs, a large main cabin with galley, full-sized marine head and a large rear deck with shaded areas.

For overnight trips, *Mohawk II* has eight private cabins and three full-sized bathrooms for guests. The crew lives in separate quarters aft. Jo Ann prepares delicious, abundant meals at sea. Jim, who never strays away at mealtime, will happily vouch for her culinary skills! Juice, beer and soft drinks are available throughout the day and evening and the honor bar is opened when you're through with the day's diving.

We take advantage of Villa Olga's unique land/sea combination during our U/W photo courses. We spend four nights and three and one-half days at Villa Olga, using the classroom for instruction and *Mohawk II* as a day dive boat. Then, we spend three and one-half days and three nights using *Mohawk II* as a live-aboard dive boat. Thus, the photo students get two different vacations (staying at the resort and then staying aboard the *Mohawk II*) during the week.

Other groups and individuals enjoy the land/sea combination when the photo courses aren't in session. Groups can contact Villa Olga for information about private packages and charters. Whether you're aboard for a day dive or for several dives, diving from *Mohawk II* is a treat!

For small groups, and short training dives, Captain Paul Doumeng takes you



Photograph by Jim and Cathy Church

A fantastic variety of excellent dive sites by day. A fantastic variety of restaurants and clubs by night. For a copy of our 24-page Dive Guide, write: United States Virgin Islands Division of Tourism, P.O. Box 471269, Miami, FL 33152.

**“...the United States Virgin Islands
have it all.”** *Jim and Cathy Church*

HANSA BAY



During World War 2, Hansa Bay claimed no less than 32 Japanese transport ships. Forty years later, their coral-encrusted wrecks remain virtually untouched in calm, shallow water. The first diving expeditions to Hansa Bay have just begun.

For details and brochures contact Ed Takahata
Toll Free: 1-800 367 7057

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THE NATIONAL AIRLINE OF PAPUA NEW GUINEA

VILLA OLGA

out in *Diver I*, a 25 foot Delta. For daily boat trips from Villa Olga, with either *Mohawk II* or *Diver I*, our favorite site is the sunken *Cartanser Sr.* A 190 foot, intact, steel-hulled cargo ship, the *Cartanser* lies in about 40 feet of water. The derelict vessel was transported to a protected cove at Little Buck Island, and was sunk there to create an exciting dive site. It's an ideal training site for wreck divers or photographers because you can polish your skills during long, shallow dives. During our photo courses, the *Cartanser* becomes our U/W studio. As a night dive location, all we can say is, "Wow." But if shipwrecks don't interest you, the reefs surrounding the *Cartanser* are fantastic for close-ups or critter watching.

There are other excellent dive sites such as Saba Island, Dry Rock (look for the large school of Atlantic spadefish) and Flat Cay, which offer a marvelous variety of shallow reefs. But our favorite sites are Sail Rock and Frenchcap. Viewed from a distance, Sail Rock has the appearance of a large sail. And, up close, you see a huge rock formation towering above you. Underwater, you'll find four pinnacles rising from about 80 feet to within 10 feet of the surface. The sides of these pinnacles are covered with colorful cup corals, encrusting sponges and other sea life.

Frenchcap is another rocky pinnacle in open ocean. On the deep dive—with depths ranging from 60 to 90 feet—you will see large basket sponges, yellow tube sponges and friendly barracuda. On the shallow dive, the seemingly endless stands of elkhorn coral—especially those in the shallows, where you can see their reflections on the underside of the surface—are truly magnificent. And, moving in closer to the large rock pinnacle, you'll find several caves and tunnels filled with lush, colorful marine life.

On overnight cruises, *Mohawk II* also visits the British Virgin Islands. There, you can dive the famous wreck of the *Rhone*—a 300 foot, steel-hulled British Royal Mail Ship sunk by a hurricane in 1867—as well as other exciting dive sites. Should you plan to dive the British waters, be sure to bring your passport.

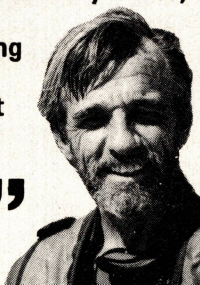
If you wish to visit the *Rhone* for a day dive, take the shuttle to the St. Thomas Diving Club branch at Pineapple Beach Resort. Captain Armando Jenik makes weekly *Rhone* trips with his colorful boat, *Goldielocks*.

For more information about Villa Olga and the St. Thomas Diving Club, write directly to resort manager Virginia Armour at St. Thomas Diving Club, P.O. Box 4976, St. Thomas, USVI 00801. For information call (809) 774-1376. For reservations, call toll free (800) 524-7940.

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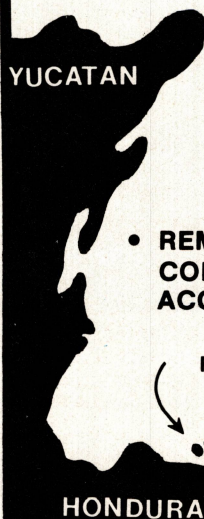
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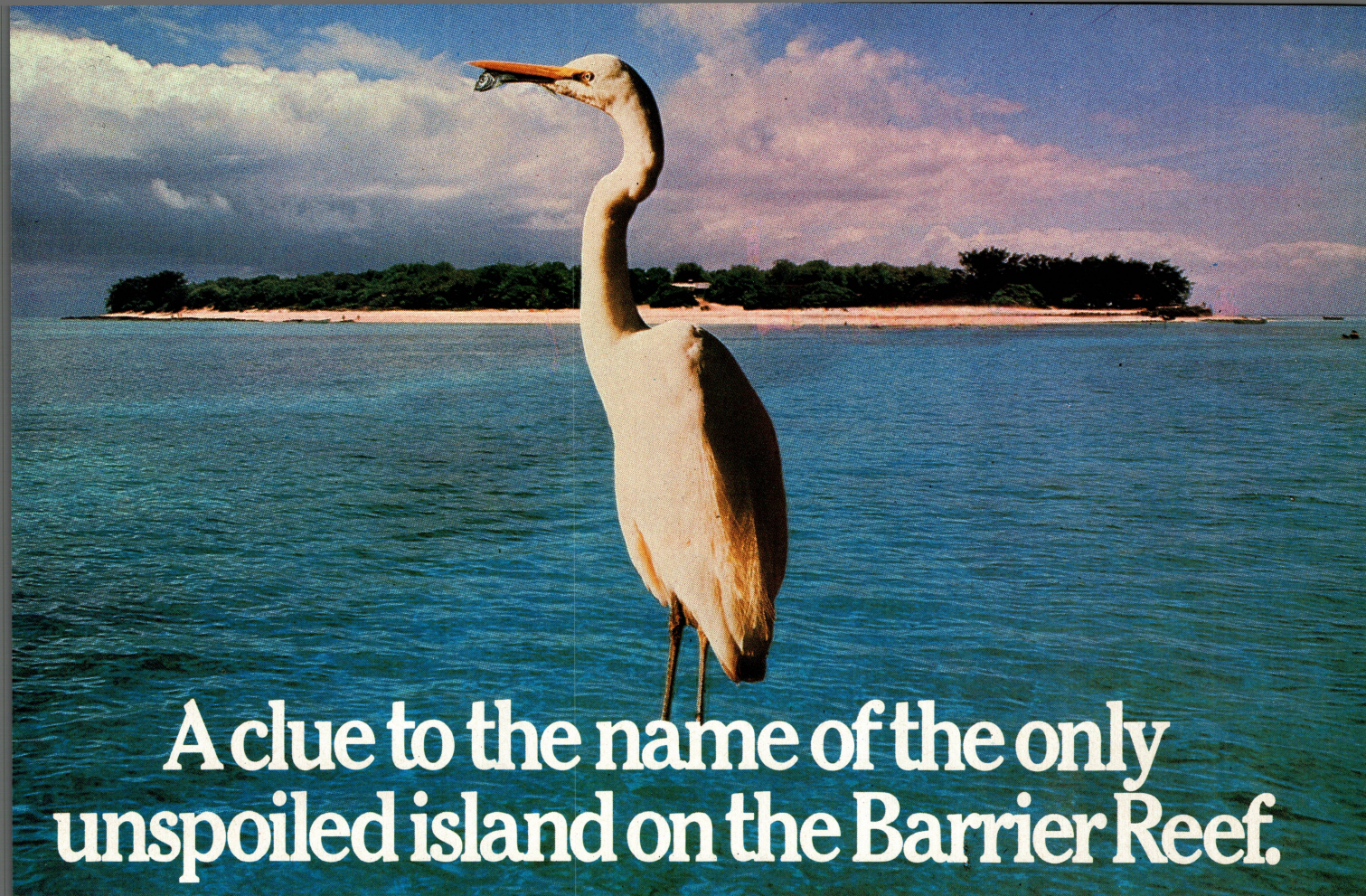
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A clue to the name of the only unspoiled island on the Barrier Reef.

72 kilometres out to sea from Gladstone is an evergreen coral cay that forms part of the Great Barrier Reef.

It's called Heron Island, named for the *Egretta Sacra*, or Reef Heron, which abounds on the island. The fact that it is actually on the reef, inhabited and unspoiled makes it unique.

Heron Island and

have little in common with Heron Island or the Barrier Reef.

The difference becomes obvious the instant you put your head under the water.

Heron Island is generally

tiny Damselfish, Sargeant Majors, and perhaps the handsome Red Emperor, who'll be as interested in you as you are in them.

Nothing you've seen in the movies will prepare you for it.

On land, the natives outnumber the visitors a thousand-to-one.

Mutton birds, noddy terns, silver-eyes, and the venerable green turtles that make Heron their nesting ground, will give you a glimpse of what the world used to be like.

And after the excitement of the day, you'll find our comfortable accommodation, delectable food, and dangerously friendly bar everything you expect in a tropical holiday.

For more information on Heron Island contact your nearest TAA or Ansett travel agent or write to Heron Island, P.O. Box 72, Hamilton, Queensland 4007.



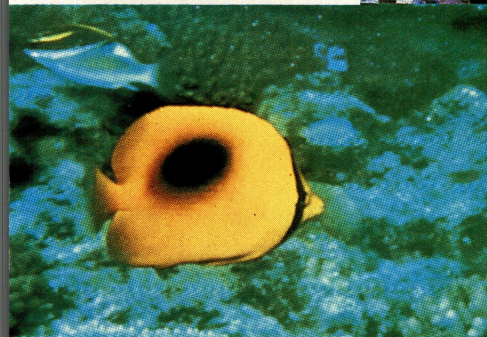
acknowledged to have the best diving in Australia, possibly the world.

However, you don't have to be a diver to experience its magic. If you can swim, we'll teach you to use a mask and snorkel.

Then, we'll take you to a spectacular part of the reef, where you'll quietly blow your mind.

The spectacular coral and marine life will take your breath away. Over one thousand varieties of brilliantly-coloured tropical fish, from the dainty to the heart-stopping, will nudge you for a handout.

You'll come face-to-face with



its surrounding Wistari Reef are so important as national treasures, they've been accorded National Park status.

One of the most commonly held misconceptions is that the Barrier Reef is studded with island resorts.

It isn't.

All but two resort islands off the Queensland Coast are mainland islands, up to 50 kms inside the reef. Though each has its appeal, they

Heron Island.
It's just a drop in the Ocean.





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DIVE MEDICINE COURSE

Medical Seminars, Inc. is offering a dive medicine course to be held at the Holiday Inn on Grand Cayman, April 23-30. The program will provide the opportunity to spend a week with leaders in the fields of diving and space medicine. Dr. Peter Bennett and Dr. David Elliott, editors of the three editions of *Physiology and Medicine of Diving* (third edition, just released) will be joined by Dr. Charles Berry, NASA medical director for projects Mercury, Gemini and Apollo.

The course, directed by Dr. Jeff Davis, will contain lectures on the medicine and physiology of both extremes of the barometric pressure spectrum—from undersea to outer space. A complete dive program, including a certification course for physicians wishing to enter diving, will be offered.

For a complete brochure, contact: Medical Seminars, Inc., One Elm Place, Suite 204, 11107 Wurzbach, San Antonio, TX 78230; (512) 492-5656.

FISHEYE FLATTOP

Fisheye Photographic Services of Grand Cayman has acquired a 26 foot Bristol Bluewater flattop to be used for Fisheye's photo/dive trips.

Named *F-Stop*, the boat has been converted to cater exclusively to underwater photographers. Each morning the pho-



tographers are picked up on the beach at their hotel and the small groups are then taken to Cayman's fishiest reefs. On board the boat is an underwater photography instructor, who is available to advise and coach. Afternoon and night dives are also available.

F-Stop is also used in conjunction with both the half day and three day photo courses which are run continually.

For more details on *F-Stop*, and all Fisheye's other photographic services, including sales, rentals and four hour film development, contact Martin J. Sutton or Ahuva Zaid at Fisheye Photographic Services, P.O. Box 1560, Grand Cayman, British West Indies.

BELIZE TOLL FREE

A toll free number is in operation for travel agents and others requesting brochure and information on Belize. The number, (800) 368-5909, is headquar-

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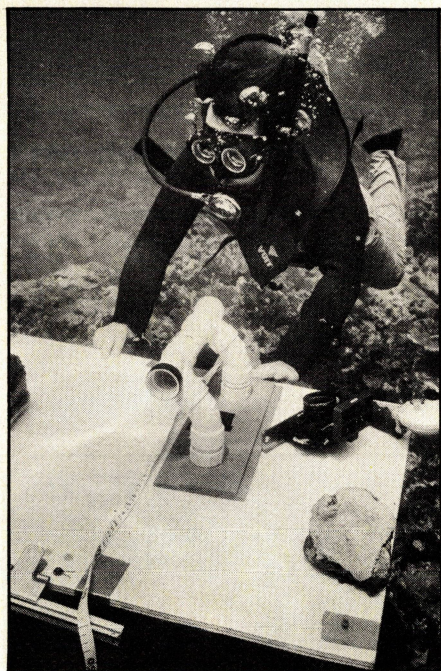
tered in the office of the Belize Embassy in Washington, D.C.

Information on scuba diving, snorkeling, sport fishing, Mayan ruins and other adventure tours is available along with the new country brochure which provides a complete listing of hotels and guest houses, dining facilities, equipment availability, booking information and other amenities. 

CEDAM EXPEDITIONS

CEDAM International, a non-profit organization, will be running scuba diving expeditions to the Sea of Cortez, California; Alacran Reef, Mexico; and Chincorro Bank, Mexico.

The Chincorro Bank expedition will take place on July 2 to 14. Cozumel or



Akumal, Mexico will be used as a staging area to explore an 18th century wreck, *Nuestra Senora de Guadalupe* (1772). Also included will be further exploration of the 40 Cannon wreck site for recovery of cannon for the CEDAM Museum.

The Sea of Cortez expedition will occur June 4-19. Its purpose will be to explore shipwrecks and study Indian culture.

The Alacran Reef expedition will take place August 6-16. During the 10 days a complete exploration of the area will be conducted.

A tax-deductible contribution to CEDAM International confirms your reservation and helps cover the cost of mobilizing the expeditions. Divers on each expedition will be provided with hotel room (double occupancy), all meals, boats and support vessels, diving related instruments, air, guides and standard scuba gear in case personal items are lost or are in need of repair. Air fare and travel expenses are not included.

For information contact: CEDAM International, P.O. Box 224046, Dallas, Texas 75264. 

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week we have night dives, and there are north wall dive trips planned each week too.

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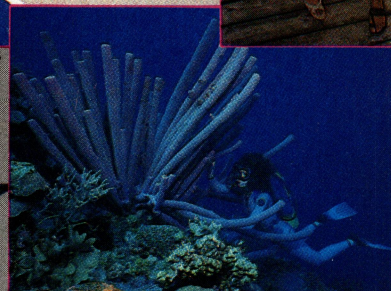
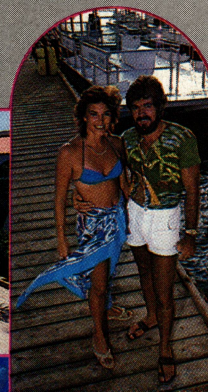


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We guarantee your hotel reservations each day of your stay. We also guarantee that the dive boat will operate every day. And finally, the weather will be at least good enough to allow us to operate safely every day. If not, your entire package minus airfare is free!

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AIKOKU MARU

Japanese Troop Ship Sunk in '44 Visited by Divers



TEXT AND PHOTOGRAPHY BY KLAUS P. LINDEMANN

The *Aikoku Maru* was a combined passenger/cargo liner 492 feet in length, with a beam of 66 feet and a mean draught of 41 feet. At the time she was lost she served as troop ship and transport. She looked modern and was rather fast for her times. There were three holds forward and aft respectively, with two

kingposts and winchhouses between. The bridge was rather massive and designed to accommodate passengers. This part was converted for the troops she carried. Additionally, from bridge to stern on both sides of the hull, quarters had been added on main deck and shelter deck. The hold openings were nar-

rowed because of this. The stern was pointed and there were two propellers.

In the early hours of February 17, 1944 the *Aikoku* was in the process of discharging the second batch of injured troops into a landing craft tied to the stern, while the first was underway to the hospital on Dublon Island. She was at-

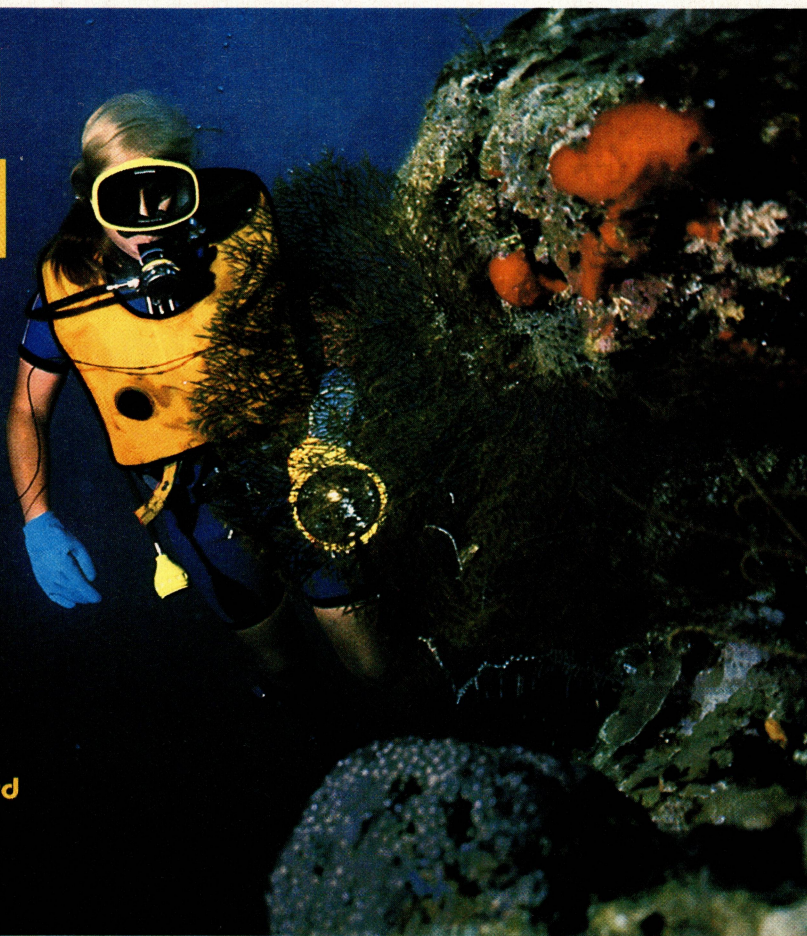
Sun, Sea & Sand

Come to the magical islands of endless summer and happy people. Sun drenched beaches and virgin reefs await your exploration. Big fish and lobsters are still plentiful, and our living corals are untouched by industrial pollution. Snorkel over our sea fan gardens... discover our historical shipwrecks... visit our magnificent ocean blue holes... and thrill over the spectacular beauty of our vertical drop-offs.

Complete scuba facilities available.

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P.O. Box 592617
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tacked by a combined torpedo and dive bomber formation. Despite strong anti-aircraft fire she was hit forward. The fore-ship exploded violently and disintegrated, while the remainder of the ship sank immediately. One attacking torpedo bomber was seen to be hit by the pressure wave and broke up in the air, its components crashing into the sea. The second landing craft at the stern got dragged under. There were no survivors. Only three soldiers in the first landing craft escaped the holocaust.

Today she lies upright on the bottom, with her foreship gone. It is 140 feet to the top of the superstructure, 170 to the troop quarters at main deck. Because of the depth, only a few people have been diving here since its re-discovery in 1973.

Descending the anchor line the water seemed blue and infinite to me. If my friend Kimiuo Aisek was right, the *Aikoku Maru* would be at the end of the anchor line. Kimiuo had actually witnessed, as a 17 year old boy, the ship explode and sink. Descending alongside the line we saw the superstructure appear out of the blue mist. The smoke stack had been the rallying point. Kimiuo and I went forward to the edge of the bridge. Twisted metal, grotesquely deformed and torn, was all that was left. Kimiuo turned and headed down the port passageway, carefully avoiding jagged pieces of metal. The bulkheads and doors further aft showed

no apparent signs of the destruction. The light at the end of the passageway became brighter and soon we were at the end of the superstructure. I swam out of it and hovered above the first hold aft. The large kingpost loomed over me, silhouetted against the bright surface.

I was about 15 feet into the hold, hugging the bulkhead, when a black opening showed up against the brownish wall. Moving closer I switched on my light and directed the beam inside. There were hydroids growing on the door frame. I had to be careful not to touch them while steadying my light. Where the beam penetrated the blackness of the room it showed human skulls and bones all scattered about. Even the regulator in my mouth could not muffle my exclamation of surprise. I raised my camera and took pictures as fast as the strobe would recycle. But, brown material began raining down on me, as my air bubbles loosened rotten parts of the old ceiling. I retreated through the door and breathed heavily, still dumbfounded. I was in the hold again and began my ascent to the shelter deck.

There were a few very precious minutes left, but I decided to get to the anchor line and start my ascent. We still had long decompression stops ahead, before I could tell Kimiuo about my discovery.

Of course, I told Kimiuo about my find. We both got excited about investigating the long lost troop quarters and the mor-

tal remains of the allegedly 2000 soldiers who went down to Davey Jones' locker. We spent several days discussing every detail of the dive plan I had proposed. Finally, we decided to go.

Again, the visibility was exceptionally good and we could even see the outline of the smoke stack from the surface. After reaching the bridge we immediately swam to the hold. Dropping down from the winch house, turning to our right, we passed shelter deck and continued to descend for a number of feet.

I waited at the door and checked the camera setting. I would be swimming in the room with the bulkheads always to my left shoulder and taking pictures as I swam along to cover and record the total expanse of the room. Kimiuo would follow me. Now, I switched on my strobe's modeling light and swam into the darkness. Right at the entrance lay the remains of at least three humans. The brown sediment covering the deck must have been at least one foot deep. There were many bones scattered around, but not quite as many as the heap at the entrance led us to believe. The aft bulkhead ended at the ship's hull and I turned right, swimming along what was the inside of the hull. Straight lines in the sediment about three feet away from the wall and parallel to it could easily be identified. Small mounds, oblong in shape, rose in

(Continued on Page 106)



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Stan Waterman
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- Luxurious seaside accommodations. An excellent restaurant featuring great food and complimentary wine. An impressive bar/lounge overlooking the ocean. Nightly U/W taped movies and slide shows.
- Just a few steps from your door.... a hot tub on the beach, comfortable video-lounge, unique island boutique, sun deck, catamaran sailing, Windsurfing, and unlimited beach combing... an exclusive island resort for serious divers.
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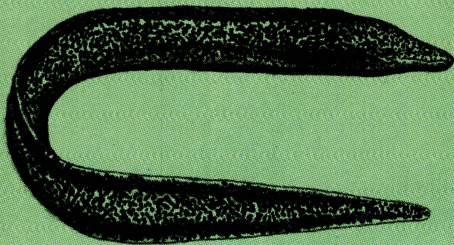
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The Spotted Moray

(*Gymnothorax moringa*)

The spotted moray of the Caribbean belongs to the Muraenidae, included in the order Anguilliformes (the true eels). Muraenids are found in rock and reef areas around the world, with at least ten species in the Bahamas and one in California. The spotted moray is found on both sides of the Atlantic, and from Ascension and St. Helena Islands; in the west Atlantic it ranges from Bermuda, the Bahamas and North Carolina to Rio de Janeiro, Brazil (Bohlke & Chaplin). In the Bahamas, this is the most common type of moray, and throughout the West Indies it is heavily fished by natives for food. □ Of the three *Gymnothorax* species found in the Bahamas, the spotted moray is distinguished from the others primarily by color pattern—brown or purplish black spots on a white or yellow-white body. The size and intensity of the blotches can vary, but the adults are always distinguishable as to species. Young spotted morays do not have the characteristic color pattern, and while in their juvenile stage they resemble *G. vicinus*, the purplemouth moray. Both species grow to about four feet in length (the other Bahamian *Gymnothorax* species, *G. funebris*, the green mor-



ay, reaches six feet). □ The pre-juvenile muraenids go through a pelagic larval period called the leptocephalus stage. These are transparent, ribbon-like forms which float in the open ocean currents until they settle on reefs and grow into recognizable juveniles. The spotted moray is a shallow-water dweller, living most of the time between 10 and (at the very deepest) 50 feet. By

day the spotted moray stays hidden in its lair, coming out at night to feed on shrimp, octopus, mussels and clams. The eels are scavengers and predators, finding their food primarily by smell. Lobster fishermen know their foraging habits well, since their traps are frequently invaded by eels at night. Larger

muraenids are known to have nasty teeth, but eels do not willingly inflict bites on divers; stories of eels wounding humans are usually situations where the animal has bitten in self-defense. Eels are hardly as ferocious as they are made out to be, and in fact are rather bashful. The way the eel breathes is largely responsible for its underserved reputation: as part of the respiration process the mouth opens and closes, revealing the sharp fangs. Eels would rather hide than bite. 🐡

Photo By Geri Murphy-Text By Hillary Hauser

Murphy took the photograph in 15 feet of water off Town Pier on the island of Bonaire. She used a Nikonos III underwater camera with a 35 mm lens and 1:3 macro tube, two SR2000 strobes, E64 film, f22.



The Holiday Dream

Holiday Inn on Grand Cayman offers the
1st guaranteed dive vacation

BY DAWN CAHOTY

By comparison, Grand Cayman may be one of the quieter islands of the Caribbean, but there's nothing lethargic about its dive industry, which handles an estimated 50,000 divers each year.

This British Crown Colony, 480 miles south of Miami, known as one of the top four dive destinations in the world, rates the distinction of creating a scuba exclusive. Grand Cayman is the only resort

guarantee states that if for any reason Bob Soto's cannot provide diving, the entire costs covering accommodations and diving are refunded. Only the air fare portion is non-refundable. Once you land on Grand Cayman the guarantee goes into effect and it also applies to reservations. If your reservations were inadvertently overlooked or canceled, you won't pay for the package costs.

almost in the center of the island's famous Seven Mile Beach, rated as one of the Caribbean's most spectacular sandy strands. The resort occupies over 1000 feet of the most expensive beachfront property on Grand Cayman—along that part of the west coast which lies in the protected lee of the normal Caribbean trade winds. On most days, the sea off this beach is like turquoise satin, ideal for



area offering divers the first Guaranteed Diving Vacation.

This concept, long discussed but never finalized in other destinations, is being offered through the combined efforts of the Holiday Inn Grand Cayman and Bob Soto's Diving Ltd. These organizations have created one of the most innovative vacations in the dive world. Divers planning a holiday in these crystal clear waters will enjoy not only Cayman's peaceful pace and unsurpassed marine world, but also peace of mind.

This claim is no come-on designed to entice the novice, but a down-to-earth effort by its creators to assure the best of both worlds—land and sea—through their services to guests. It works this way:

The Holiday Inn Grand Cayman/Bob Soto's Diving Ltd. Guaranteed Diving Vacation package includes eight days/seven nights' standard accommodations; breakfast daily; six, two tank morning dives; unlimited shore diving during working hours (8 am-5 pm); one night dive; manager's welcome rum punch party on Tuesday; Bob Soto's Diving Ltd. T-shirt and nightly admission to the Wreck of the Ten Sails Lounge. This package is available for individuals or groups and the



It's the blueprint for a no-fail vacation. And, for those who harbor too-memorable horror stories of ruined vacations because of false advertising, malfunctioning resort equipment or bad weather, this Grand Cayman guarantee is a sure lure.

And, here's the most unbelievable part of all: The price for this eight day holiday is only U.S. \$599 (plus tax and service) per person, double occupancy—and includes roundtrip air fare from Miami.

You've heard the promise—now consider the product. Other packages may sound as economical, but this vacation offers divers economy with class in a setting that provides as much during topside hours as it does underwater.

The Holiday Inn Grand Cayman is a complete beachfront watersports resort,



swimming. Directly offshore, just one-quarter mile out, lies one of the world's most famous coral drop-offs. Thirty-five other excellent dive sites are just a short boat ride from the beach.

The largest resort on Grand Cayman, the Holiday Inn, offers 215 air-conditioned rooms in two attractive buildings—the Brac Wing is the newer three-story addition parallel to the beach. Between the two buildings are the hotel's two restaurants, Wreck of the Ten Sails Lounge, and freshwater swimming pool.

Every desirable creature comfort is available to guests right on the Holiday Inn premises—from a light snack in the Veranda Room (open for breakfast, lunch and dinner) to gourmet continental cuisine in Chez Jacques, known as one of Grand Cayman's finest dining spots (open from 6:30 pm until 10 pm). And, the popular Corsair Wharf beach bar is a favorite watering hole for visitors and residents alike, offering every kind of tropical rum drink guests could want.

In addition to a variety of gift shops, boutiques and duty-free shops offering everything from black coral to beachwear, the Holiday Inn has a beauty salon in the lobby, Total Look. Staffed by excel-

photos/Geri Murphy



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HOLIDAY DREAM

lent stylists it is open six days a week.

During the sun drenched daylight hours, the Holiday Inn is a complete beach resort, offering every imaginable land and sea activity with the exception of golf and gambling (neither exists anywhere on Grand Cayman). Hobie Cat, Jet Ski, Sunfish and Windsurfer rentals (internationally certified Windsurfer School), as well as parasail rides and a variety of cruises, are available through the Aqua Delights concession on the beach.

For the less watersports inclined, there are four tennis courts (and a resident tennis pro) equipped with night lighting; and a volleyball court on the beach.

Comfort and convenience—and plenty of activity—are the prime attractions of the Holiday Inn/Bob Soto's Diving Ltd. vacation guarantee.

Now consider the rest of the package picture: The range of services and dive opportunities in Cayman's waters, available through the Bob Soto's Diving Ltd. Holiday Inn dive shop:

Bob Soto's Diving Ltd. celebrated its 125th anniversary last year. Soto remains on the board of directors, but new owner, Ron Kipp now oversees the operation as president.

Serving Grand Cayman's Gold Coast, Soto's has four dive shops, the largest right at the Holiday Inn. A fleet of four dive boats serves divers, including the 52 foot *Holiday Diver*, a double deck dive barge with drop-front ramp. It can actually drive up on the Holiday Inn beach and allow 30 divers to walk on-board. The 37 foot drop-front landing craft, *Island Diver*, newly refurbished and overhauled, is the newest addition—rumored to be the first dive boat brought to Grand Cayman by Bob Soto. Other boats include the 45 foot *Reef Diver*, which can carry 20 divers; the 36 foot *Paradise Diver*, ideal for trips to the north and south coast walls; and a 42 foot glass bottom boat for sight-seeing and snorkeling trips.

The Soto fleet operates seven days a week, offering morning two tank and afternoon one tank dives. The morning dive, which departs the Holiday Inn at 9:00 am, includes one deep dive, usually on one of Cayman's spectacular drop-offs such as Trinity Caves or Orange Canyon, and a second shallow dive on beautiful coral reefs perfect for underwater photography. During the six days of diving this package offers, divers may see a dozen different sites and will be treated to some of the Caribbean's finest underwater panoramas, prolific sponges and other marine life.

The night dive takes place on one of Cayman's shallow sites, such as the wreck of the *Balboa*, a steel-hulled freighter dynamited years ago and now spread over the ocean floor in 40 feet of water. This place is a flea market of marine life, particularly at night, including swarms of yellowtails and sergeant majors.

Managing the Holiday Inn dive shop is retail sales manager Georgia Dolack, a certified divemaster and one of 22 Bob Soto's Diving Ltd. employees (12 of them are certified instructors). The shop has just expanded to include a complete selection of sales and rental snorkeling and scuba equipment, T-shirts and souvenirs and a variety of dive accessories. New for 1983 is a complete regulator repair service specializing in Scubapro equipment, and a line of rental Nikons and Sea & Sea cameras. Overnight E-6 processing is also available through the Soto's shop.

The Holiday Inn is the obvious choice for divers with non-diving family members because of the variety of activities available right at the resort. Furthermore, Bob Soto's Diving Ltd. offers an introduction to diving program, a resort course, in the Holiday Inn pool from 9:00 am until 11:30 am, followed by a shallow dive with the instructor that afternoon. This means non-divers can learn the basics of diving and join in the experience during the eight day package period at a very reasonable rate.

Also new for 1983 is an all day cruise aboard the 102 foot luxury yacht, *M/V Pelorus Jack*, which leaves from the Holiday

Inn beach at 8:30 and returns at 5:00.

Featured during this day offshore is a morning two tank and afternoon one tank dive, breakfast and lunch aboard and cash bar after the final dive. The *Pelorus Jack* cruise offers the ultimate convenience of a live-aboard dive boat and the excitement of visiting Cayman's north and south coast sites in comfort, weather permitting. And, the cost is only \$62.50 booked through Soto's at Holiday Inn.

The array of diving opportunities is a catalogue of fantasies in the Cayman Islands—year-round. If any destination in the Caribbean didn't need a guaranteed diving vacation program, it would probably be the Caymans. The weather conditions and professional services available ensure year-round bottom time. In fact, during the period from Nov. 1981-Nov. 1982, Soto's had *uninterrupted* service; if there is a way to dive safely, Soto's customers will get there.

Deep sea fishing is available for early birds wishing to try for the variety of gamefish which run year-round through these waters: blue marlin, wahoo, yellowfin tuna and dolphin fish are caught in every calendar month. Charters (half and full day) are booked with Captain Bryan Ebanks aboard *Tashara I*, through the Soto's operation, for one to six people.

Scuba diving and watersports may fill up your daylight hours at the Holiday Inn, but dawn and dusk offer other action. Sunset brings camaraderie over cozy cocktails in the Pirates Cove Lounge adjacent to the Veranda Room, and elegant dining in Chez Jacques or informal dining in the Veranda Room.

Next door to Chez Jacques is the Wreck of the Ten Sails Lounge, and the guaranteed vacation package includes free admission to this popular night spot. It holds a maximum of 200 people and is usually packed between 9:00 pm and 1:00 am (midnight on Saturdays).

Enjoyed by residents as well as visitors, the Wreck of the Ten Sails' main attraction is the Barefoot Man and his Caymanian band, a ten year old tradition on Seven Mile Beach. Every night Barefoot entertains the audience with a wide variety of songs including calypso, country/western, rock and roll and pop. Barefoot is not only an entertaining song writer/singer, but an international celebrity in the dive world: He has written some 20 songs dealing with and dedicated to scuba divers.

All this vacation action is available for those cost conscious divers who don't want to sacrifice comfort and convenience and can't afford to suffer through a dive holiday that becomes a dry holiday.

For information or reservations for Grand Cayman's exclusive vacation package for divers, contact your travel agent or Holiday Inn Grand Cayman, Suite 205, 7220 N.E. 36th St., Miami, FL 33166. The nationwide toll free phone number is (800) 327-4069 or in Florida, (305) 592-8175. ✽

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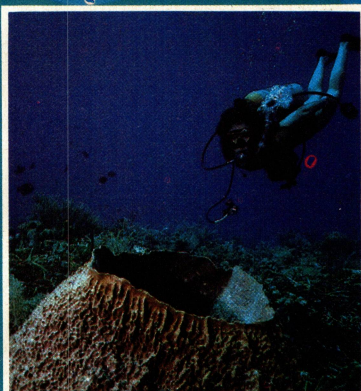


Photo by Tim O'Keefe

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La Mer Diving Seafari, Inc. of New York has a new, first class, live-aboard dive program to the Sea of Cortez/Baja, California.

La Mer, with the cooperation of Baja Expeditions, will operate two vessels which are especially equipped for diving: the 80 foot *Don Jose*, able to accommodate up to 18 divers; and the 120 foot re-



search vessel *Baja Explorador*, accommodating 20 divers in double private cabins. Both vessels are equipped with two compressors, aluminum air tanks, dive platform and dinghies.

The two ships are scheduled for two programs. Scuba diving operations in the Sea of Cortez take place during the months of July through October and La Mer offers a choice of either a seven day excursion or a 12 day special interest voyage.

La Mer's special program offers an on-board marine biology seminar conducted by Dr. Eugenie Clark, July 17-29. An advanced underwater photography seminar, also on board, will be conducted by Anne and David Doubilet, Sept. 11-24.

These programs are available for dive shops and club groups. Travel agent and individual inquiries are welcome.

For further information and reservations contact: La Mer Diving Seafari, Inc., 823 UN Plaza, Suite 810, New York, NY 10017; (212) 599-0886.

AT REEF/SOUTH OCEAN BEACH

South Ocean Beach Hotel and Resort has made At Reef Ventures responsible for the marketing and promotion of scuba diving trips to the resort. The resort is on a secluded part of a 5000 acre development on New Providence, Bahamas.

The dive operation, staffed and managed by Grover Moberley, has a complete line of rental equipment and a secluded beach, and many watersports activities are available along with instruction. Four day/three night split week packages, eight day/seven night packages, and special group rates and incentive programs are available.

For information contact: At Reef Ventures, 292 S.W. 34th Street, Ft. Lauderdale, Florida 33315; phone toll free outside Florida (800) 327-REEF—Florida and Canada, (305) 524-0106.

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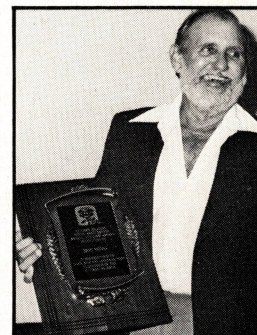
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SOTO RECEIVES AWARD

Bob Soto, founder of Bob Soto's Diving Ltd. on Grand Cayman, was recently the recipient of Cayman's top tourism industry award. Soto received the award from Bruce Copland, president of the Cayman Islands Hotel Association.

Bob Soto's Diving Ltd. celebrated 25 years in the diving business in January of



this year. His first dive operation was at the old Pageant Beach Hotel, and as interest in the sport of scuba diving grew, he built similar operations at Beach Club Colony and Galleon Beach Hotel.

Although Soto's businesses are under different ownership today, they still bear his name and he continues to support tourism in these islands by serving as chairman of the board of Bob Soto's Diving Ltd.

Bob Soto's Diving Ltd. serves the Holiday Inn and Cayman Islander hotels with on-site dive shops, and the Paradise Manor Condominiums and other resorts through its downtown Lobster Pot headquarters.

TOBAGO SCUBA LIMITED

Tobago Scuba Ltd., an independent dive service in Charlotteville, on the north eastern tip of Tobago, is offering a special dive package April 15-December 14. The package includes: cottage-style accommodations on the beach for seven nights; ten boat dives (extra dives are available—night dives if you bring your own light); round trip transport from the airport; fully prepared dinners (breakfast and lunch are serve yourself, with food available); tanks; weights; and dive guide.

Dives will cater to group interest such as photography or marine biology. Non-diver rates are available and the service can handle groups of 12, 16 or 22 (ten divers maximum).

For information contact: Jane Boyle, Tobago Scuba Ltd., Charlotteville, Tobago, Trinidad & Tobago.

DAN TO GRAND CAYMAN

The National Diving Accident Network, (DAN), in cooperation with the Undersea Medical Society, is sponsoring a course

on Diving Accidents and Hyperbaric Oxygen Treatment. The course will be held October 15-22 on Grand Cayman. This clinical course in diving accident management is designed for physicians and emergency room staff including paramedics and nurses and is available for continuing education credit. The opportunity for six days of superb diving is included.

Further details are available from Cindi Easterling, Office of Continuing Medical Education, Box 3306, Duke University Medical Center, Durham, NC 27710. >

EASY DIVER VACATIONS

Sea Safaris has set the dates for Lou Fead's 1983 Easy Diver Vacation programs. They are as follows: May 14-21 Bonaire, N.A.—Flamingo Beach Hotel; July 16-21 Harbour Island, Bahamas—Valentine's Dive Center; November 12-19 Grand Cayman, B.W.I.—East End Dive Lodge.

The EDV program combines lectures, skill dives, slide presentations and fun dives—concluding with an advance certification for each participant.

Participation in the EDV's is limited. To receive a brochure and course details, contact Sea Safaris, 3770 Highland Ave., Suite 102, Manhattan Beach, California 90266; or call (213) 546-2464. >

AQUA ADVENTURES/BAHAMAS

Aqua Adventures, in cooperation with Eastern Airlines, is featuring an all inclusive dive vacation package to Small Hope Bay Lodge on Andros, Bahamas. The full service dive resort has 20 rooms, bungalow style, on the beach.

Dive vacation packages include three meals daily for four nights, and four dives. Non-diver companion rates are available. Prices are per person, double occupancy and do not include air fare.

For further information, contact: Aqua Adventures, Inc., 390 Fifth Avenue, Suite 502, New York, New York 10018; or phone (212) 563-5700. >

TOUCH THE SEA AT NIGHT

Dee Scarr, creator of the Touch the Sea program of personalized dive guiding on Bonaire, has inaugurated a special dive program. With the *Rainbow Runner*, Scarr will take small groups of divers to sites inaccessible from shore on Bonaire's north coast, offering an afternoon dive, a leisurely sunset dinner on the beach or on the boat, and a night dive. The evening is concluded with a wine and cheese celebration on the return trip.

Rainbow Runner is a 28 foot vessel with a 10 foot beam. She is powered with an 80 horsepower diesel engine and equipped with a dive platform and ladder, VHF radio, and recording fathometer.

For more information about the *Rainbow Runner*/Touch the Sea combination dive, write (via airmail, please) to Dee Scarr, c/o Touch the Sea, Bonaire, Netherlands Antilles. >



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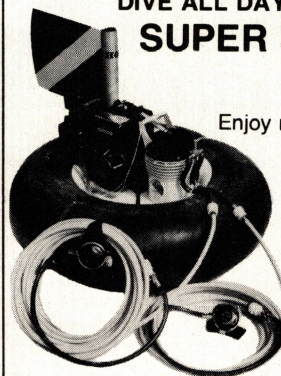
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AIKOKU MARU

(Continued from Page 95)

a repeated pattern above the sediment. These were remnants of bunks with bundles of blankets at the ends. Many more bones were lying around and in one space there was a complete skeleton. There was no way of telling what all was buried under the layer of sediment, but we could make out several rows of bunks extending the length of the room, their wood long decayed and gone. Overhead, there was an electric light in its cage. The



glass had a strange color. Continuing to take pictures, I finally rounded the last two corners, and after reaching the door, swam out into the hold.

As I exited the room I became aware of the blue hue of the water around me. Swimming straight across the hold to starboard, I first looked for the door, only recognizing it when I came close. The steel door had remained in place and was only open a little. It was too narrow to enter in comfort and the hinges were immovable. Putting my head and the camera into the gap I shot a frame and withdrew. The bottom had presented an almost identical picture to the room we had just left. Brown material covered the deck and there were scattered bones and skulls everywhere. A door in the aft bulkhead was open allowing a view into the adjoining room.

Kimiou followed me as we swam over the winch house to the second hold aft. We found the door and swam inside, repeating the procedure used before. There was hardly anything which set this room apart from the first we had visited. It did not take me very long to finish the survey here. Coming out of the door I was surprised at how quickly we had finished the rounds through the rooms—we just had enough time to cross this hold and check it as well. Here, the scenery was slightly different. There were a few T-beams laying around and the sediment was black instead of brown. Also, we could not see any bones here.

The time had come when we had to swim back to the anchor line. Ascending and stopping again for decompression, I was glad we had not touched any of the bones. It was not for us to disturb the eternal peace of the fallen soldiers of the Aikoku Maru. 🌊

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In the Bahamas, San Salvador is also the home of Island Divers, Ltd. Also at the facility is the Underwater Photo Center which offers daily E-6 film processing, equipment rental and limited repairs, as well as one and two day courses taught by the resident photo pro. It is also the home of the Paul Tzimoulis School of Underwater Photography, which features specialty advanced week-long photography programs. Eight day/seven night packages are available with special group rates and incentive programs.

For information contact: At Reef Ventures, 292 S.W. 34th Street, Ft. Lauderdale, Florida 33315; phone toll free outside Florida, (800) 327-REEF—Florida and Canada, (305) 524-0106. 🐠

DIVERS UNLTD MARATHON

Divers Unlimited has opened a new retail store, dive charter, and training complex at Marathon in the Florida Keys. The new 2000 square foot facility is based at the Holiday Inn and Marina near Mile Marker 54.

Divers and their guests will enjoy the unique service and facilities of the Holiday Inn including a pool, tiki bar, and gourmet restaurant. Other dockside services include a fleet of charter fishing boats, complete tackle shop, boat ramp and docking facilities. Other diversions and entertainment are available only minutes away in the numerous shops and restaurants in Marathon.

Special diver's travel packages are now available at introductory prices by contacting the Travel Department at Divers Unlimited, 6023 Hollywood Boulevard, Hollywood, Florida 33024; or call toll free (800) 327-2740—in Florida (301) 981-0156. 🐠

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Professional underwater cinematographer Bill Lovin will teach a course in underwater motion picture techniques at the Flamingo Beach Hotel on Bonaire. The week long course runs October 1-8.

The course is designed to teach professional production techniques to those currently shooting Super-8 and 16 mm film as well as still photographers who want to break into U/W motion pictures.

Professional model Susan Abbott will teach underwater modeling techniques and will be available to work with students in their own filming. Additionally, special emphasis will be placed on the use of increasingly popular small format videotape equipment underwater.

For more information about Bill Lovin's Underwater Cinematography Course contact the Flamingo Beach Hotel, toll free (800) 847-7198; New York state (800) 252-6323. 🐠

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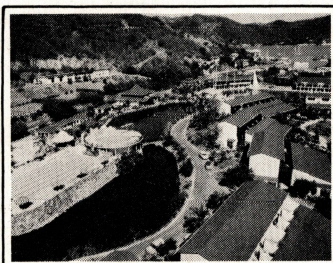
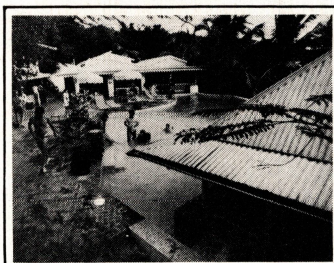
*Dr. Max McGinnis and his
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In 1542 Spanish Admiral, Juan Cabrillo, anchored off Point Fermin, making the first sighting of present day Los Angeles. Since that time the Palos Verdes Peninsula (PVP) coastline has become the location of many historical events. Today, it is one of the most exciting areas to dive in Los Angeles County.

There are no less than 16 separate dive sites along the more than 17 miles of PVP coastline. Many of these mark the spot of an historical event. Knowing the history adds another dimension to beach diving, one that makes the dive site come alive with the adventure of the past.

In most cases, rocky beach accesses are found via steep dirt paths from the cliffs above. Only at Cabrillo Beach and White's Point/Royal Palms Park can one park a car near the water.

The PVP offers a wide variety of dive activities. The topography is diverse, offering sandy and rocky bottoms, reefs and kelp beds. Marine life is plentiful: fin fish, lobster, crabs, rock scallops, octopi, an occasional seal—you name it. At one time Palos Verdes was the mecca of the abalone industry. However, owing to overfishing and pollution, the ab population has dwindled to the point where the California State Fish and Game Commission has imposed a moratorium on abalone from Palos Verdes Point south to Dana Point in Orange County. The Fish and Game Commission is restocking the area

in the hopes it may once again be a source of abs for the sport diver.

There are several wrecks along the coast. The one most accessible to beach divers is the *Dominator*, a Greek registered Liberty Ship which ran aground at PV Point in 1961, and split in half the following year. There is also the wreck of the *Avalon*, one-half mile off the coast at Margate, in 60 feet of water.

Areas such as Flat Rock offer some of the best snorkeling to be found anywhere in Southern California. It is also an ideal place for underwater photography as is Christmas Tree Cove and Point Vicente. A beach diver could hardly ask for more.

One word of caution, however. Whenever you dive along the PVP, carry as little cash as possible, and lock your car!

(Continued on Page 116)

A Southern California sunset over Fermin Park Cove. The rugged, rocky coastline in the Palos Verdes area offers a variety of diving from kelp beds to wrecks.

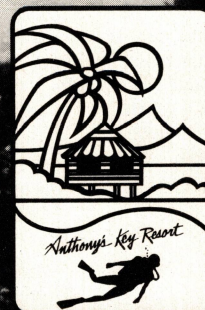


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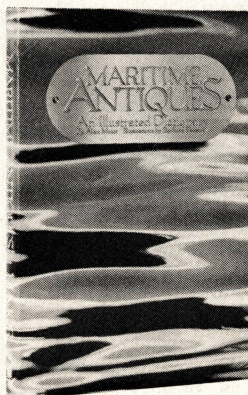
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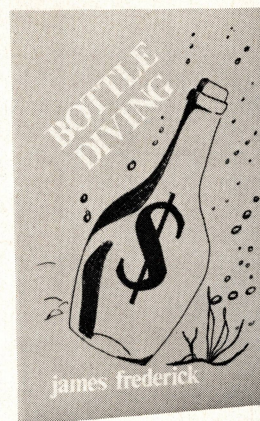
- 1 Successful Underwater Photography**—Written by Howard Hall, this guide includes gorgeous color photographs, critiqued for mechanical and artistic technique, and marketability. \$14.95 in soft cover. Marcor Publishing, P.O. Box 1072, Channel Islands Harbor, Port Hueneme, California 93041.



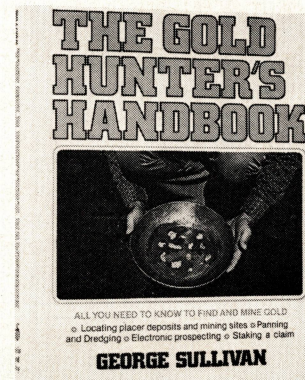
- 2 Maritime Antiques: An Illustrated Dictionary**—With over 450 entries, this book describes and gives a background on knickknacks, navigational aids, crafts and everyday items from sailing life of the 19th century. A valuable reference for the collector. \$12.95. A. S. Barnes and Co., San Diego, CA 92121.



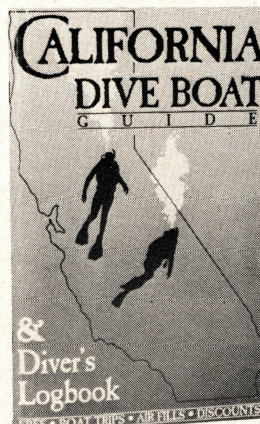
- 3 Salvage Laws for Weekend Divers**—Including a list of salvage terms and their definitions, this small book is packed with information on general salvage laws and customs which apply to small, independent operators. Regulations are discussed briefly and in layman's terms. \$3.95. Rowe Pub., Milwaukee, WI.



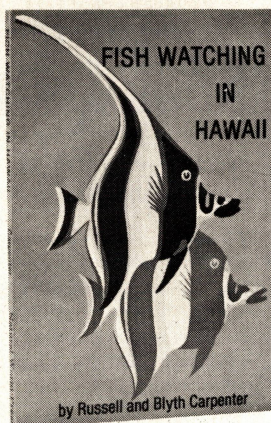
- 4 Bottle Diving**—Where to find old bottles, how to retrieve them, restoring them, and how to sell them are all covered in this work. Numerous drawings depict the various styles and shapes of bottles in relation to how and when they were made as well as what they contained. \$4.95. Rowe Publications, Milwaukee, WI.



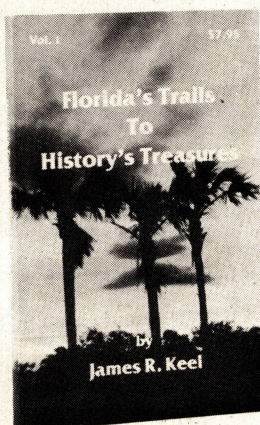
- 5 The Gold Hunter's Handbook**—Written by George Sullivan, this guide covers such topics as: panning, basic placer mining, gold dredging, electronic prospecting, and staking a claim. Includes coverage of gold mining areas in the U.S. \$15.95. Stein and Day, Scarborough House, Briarcliff Manor, NY 10510.



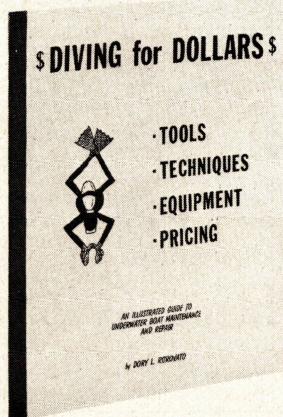
- 6 California Dive Boat Guide**—Contains descriptions of, addresses for, facilities on, and sites visited by charter dive boats from San Francisco to Baja California. Boat etiquette is discussed. The book also includes a diver's log. \$4.95. Marcor Publishing, P.O. Box 1072, Port Hueneme, CA 93041.



7 Fish Watching in Hawaii—Not only does this book have illustrations on over 80 Hawaiian reef fish; each also has size, habit and habitat information. Color photos give a sampling of these fish in typical activities. 120 pages. \$9.95, soft cover. Natural World Press, Suite 246, Baldwin Avenue, San Mateo, CA.



8 Florida's Trails to History's Treasure—This book gives little-known facts about, and pinpoints the locations of, the sites where history-making events occurred in Florida. These sites are perfect for relic hunting. Maps are included. \$7.95. Seajay Enterprises, Box 607, Ft. Lauderdale, FL.



9 Diving for Dollars—This illustrated guide by Dory L. Ritrovato gives the basic instructions necessary to start a business in underwater hull maintenance. Covers tools, procedures and business practices. Soft cover, 92 pages. \$19.95. From Dory Pub., 109 Trout Ave., Box 484 Salyer, CA 95563.

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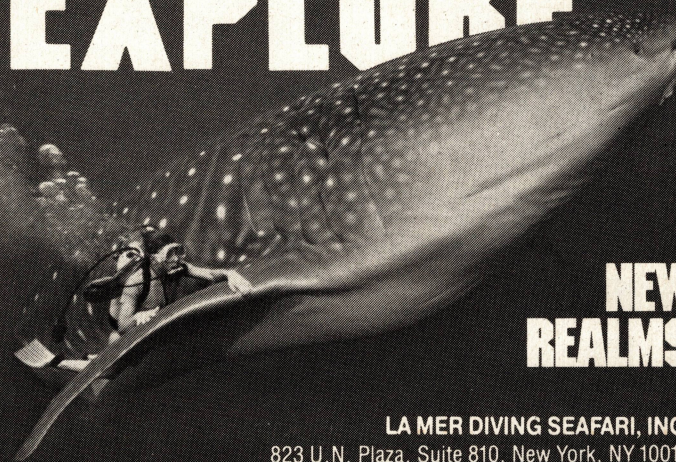
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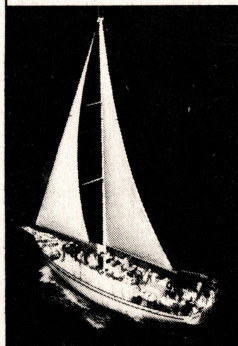
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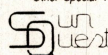
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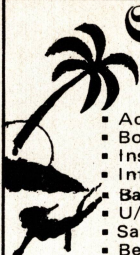
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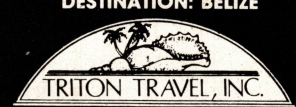


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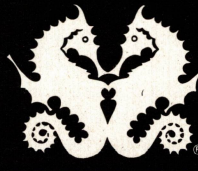
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TEXT AND PHOTOGRAPHY BY ROBIN PITMAN

The *New Brunswick* was not a Spanish galleon laden with coffers of Inca gold, nor was she a British Navy admiralty payship sunk off some foreign coast. Her wealth lies in her stately, preserved condition, a true timecapsule of 1858. Only the cold, fresh water of Lake Erie could preserve and protect her.

The barque *New Brunswick* was built in 1847 in St. Catharines, Ontario under the direction of Louis Shickluna. Her fame soon spread when she carried 18,000 bushels of wheat from Chicago to Liverpool, England in 1847. This was the first Great Lakes vessel to ever make a direct shipment of grain to Europe.

The ship's destiny was to elude the violent storms of the North Atlantic only to fall prey some ten years later to the treacherous storms of Lake Erie. On August 25, 1858, the *New Brunswick* was heavily laden with a cargo of black walnut and white oak timbers stowed in her hull and lashed to the deck. The ship was bound for Tonawanda, New York from Chatham, Ontario. By the evening of August 26, gale force winds pounded the three-masted ship as she tossed and plunged through the waves. Suddenly, without warning, the rudder broke. The ship turned broadside, bringing the full force of the waves against her side.

The captain and crew heard the sounds of death as the ship turned on her side—the groaning and snapping of chain binders as the load shifted and the chainplates tore loose from the decking. The ship disappeared into the darkness of the night waters with five of the crew following her to the bottom of Lake Erie.

The morning after, a rescue boat found the body of a sailor still lashed to the mast. Continued searching proved successful when three more men, including the captain, were rescued from a raft.

Lake Erie does not give up her shipwrecks easily. Countless salvage operations failed to find the *New Brunswick* over the years. She was finally located through the talents of an amateur marine archaeologist, Mike Dilts.

Dilts applied the techniques of tropical water excavation to the shifting sands of Lake Erie. The key to a speedy and successful search lies in documented materi-

al. The dusty archives of Canada's shipping journals gave him endless information on sunken and "presumed lost" shipwrecks in the Great Lakes. Somewhere on the microfilm he stumbled upon the *New Brunswick*.

Vivid newspaper accounts of the ship's sinking soon revealed a rough location. Mike then carried out personal interviews in the area talking to local fishermen who could not recall snagging a net in this area. The pieces of the puzzle slowly came together, however, a number of questions remained unanswered. Had the wreck become buried in the silt or was the wreck near the gas wells the fishermen avoided?

In March of 1979, Dilts took the search up in earnest. He laid a base line along the cliffs of Lake Erie at a location he thought overlooked the *New Brunswick*. A grid system was set up so that every square meter of the bottom could be charted and checked systematically. Next, underwater sleds were used. This proved to be more exciting than anticipated as large rocks appeared out of the murky waters. This approach to wreck hunting had to stop as it turned out to be a rather harsh field test on wetsuits and drysuits, not to mention some human body parts that were also exposed to the sharp rocks.

The dive team then started using a chart recording depth sounder but this failed as well. With his cash disappearing into Lake Erie, Mike stopped the search.

During the winter of 1980, Dilts retraced the steps of his search. Satisfied with this research, Mike took a deep financial plunge to locate the wreck by using sidescan sonar. This unit is towed behind a boat emitting signals that bounce off the bottom. The return signals are then transferred onto a continuous printout.

Simon Dexter of Marine Salvors, Toronto and Jim Kennard of Rochester Engineering, Rochester, New York, were contracted, along with their equipment, for four days of searching. Mike's funding permitted no margin for error. Scuba tanks, drysuits and weightbelts were loaded on the boat May 3, 1980. The first day proved disappointing as not a trace of the ghost ship could be found.

At 2:30 in the afternoon the next day the chart recorder frantically picked up speed and left the unquestionable drawing of a ship resting on the lake bottom. In the excitement, a Loran-C reading was taken and a grid reference was hastily written down.

It was perfectly calm as the three divers slipped over the side, adjusted their buoyancy and followed a line down through the dark water.

Mike was preparing himself for the unexpected when suddenly he hit the wreck. The whole dive took only 15 minutes, but it seemed like 15 years as the divers explored the ship. At the surface, the ecstatic group broke into laughter as each described his own adventure. The wreck was in excellent condition—especially the bow, with all three anchors, the windlass and part of the bowsprit still in their original positions.

The next two and one-half months and over 110 dives were spent on the actual archaeological excavation of the wreck. It was very well preserved considering 122 years of submersion and repeated attacks from ice and sand.

The wreck site was carefully gridded with ropes connected to tie-off rings on iron stakes. Each object was then recorded in its particular location. At the surface, other divers tagged and numbered the artifacts. Chemical treatment baths were set up at Dilts' farm to save every artifact from deterioration. Pottery shards were collected and lightly cleaned until they could be further identified. An artist worked feverishly to finish a three dimensional drawing of the wreck exactly as it was found.

The list of artifacts grew quickly as beautiful stoneware and terra cotta jugs were recovered in situ. Even the crew's personal belongings started surfacing: a pair of leather shoes, a horse hair brush, pins, a complete straight razor and even the cast iron galley stove. There seemed to be no end to the artifacts. The straight razor proved to be a historical revelation in itself. Recovered from a bucket of pine pitch, it was traced to its original manufacturer, C.T. Bingham in Sheffield, England. The sides, or scales as they are called in the trade, were fashioned from buffalo horn from India. The trademark, Tally Ho, was traced and identified to within two years before the ship went down in 1858.

Following the excavation, Dilts' salvage team recovered over 721 cubic feet of black walnut and white oak square timber beams. The crew battled some of the most formidable diving conditions—zero visibility, constantly changing winds and extremely cold water. Dilts and his salvage crew spent over 200 total man hours underwater and recovered over 205 artifacts. Dilts' exploits have proven that marine archaeology and salvage can be combined to preserve the international heritage of the Great Lakes. 

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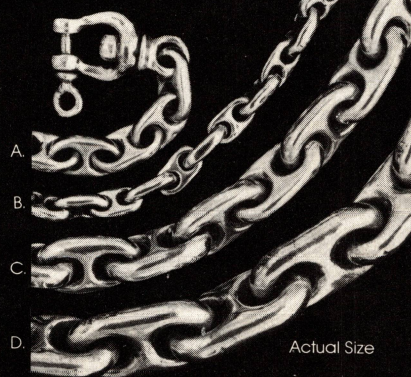
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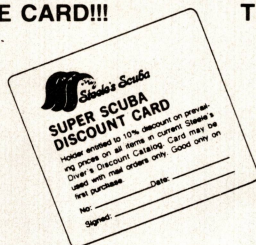
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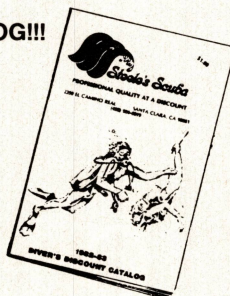
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PALOS VERDES

(Continued from Page 109)

Here then are the 16 dive sites that offer the hardy and adventurous beach diver a colorful look into the historic past of Palos Verdes Peninsula.

Malaga Cove: At 300 Paseo del Mar, Malaga Cove has a parking lot at the top of the hill. A wide paved path leads to a rocky beach below the swimming pool. The diver will encounter kelp and scattered reefs. Visibility, owing to its location next to sandy Torrance Beach, can be very poor. Generally, it is about ten feet.



Once a good place for bugs, now it is becoming depleted. It is designated a Marine Preserve by the community of Palos Verdes Estates.

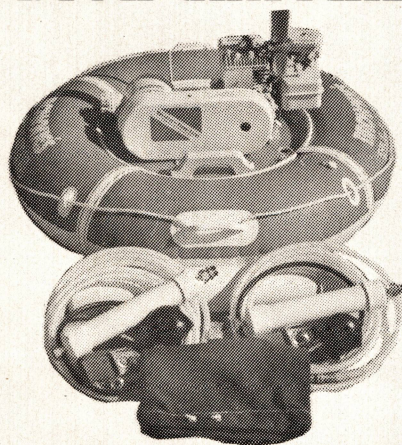
An eight foot mastodon tusk was found at the edge of the bluff just northwest of the Malaga Cove School in 1927. A whaling station was established here from 1885-1890.

Haggarty's: At 500 Paseo del Mar there is a short path leading to a rocky beach. Divers will find scattered rocky reefs along a sandy bottom that reaches a depth of 40 feet on the outside of the kelp bed.

In the 1920's, J.J. Haggarty, a department store magnate built a 32 room house with ceiling murals, carved railings, a seven acre garden, tower and private pier. He never lived in the house, as his wife thought it too far from downtown Los Angeles. The pier was severely damaged in a December, 1940 storm. The house was bought for \$70,000 in 1950, and converted to the present day 13 room chapel.

Flat Rock/Bluff Cove: At 611 Paseo del Mar is a wide path that leads to both

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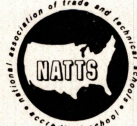
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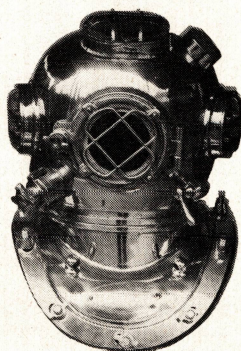


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these locations. Where the dirt path forks to the right is a very steep hill to Flat Rock proper, and straight ahead leads to Bluff Cove. Many divers prefer to continue straight and cut down to the rocky beach where the path bends. It's hard to imagine a better snorkeling spot than Flat Rock. Only experienced divers should consider an entry off rocky point. Depths vary from 10 feet inside the point to 40 feet out by the furthest exposed rocks. Kelp, shallow depths, and a rocky bottom combine to offer a most diverse variety of marine life. Inside Bluff Cove there is a sandy beach with scattered rocks. Visibility is poor because of the sand bottom

photos/Charles Wilbert



The bow of the Liberty Ship, *Dominator*, is onshore at Palos Verdes Point. Below: The steep trail south of the lighthouse at Point Vicente is known as Cardiac Path.



and the water is only ten feet deep, but halibut are present. So are surfers.

In December, 1968, the 300 foot barge *Sacramento* ran aground in the cove.

Margate: Access to this location begins at the lot across from 1748 Paseo

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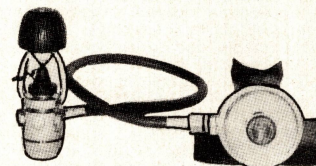
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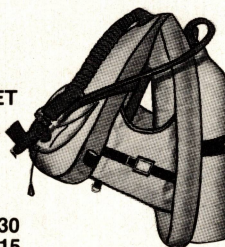
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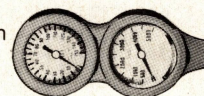
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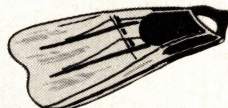


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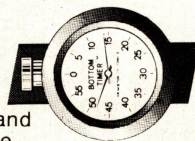
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del Mar. A steep dirt path leads to another rocky beach. There is a lot of kelp with depths from 10 feet inside to 40 feet outside. Visibility is good, but dense kelp limits the amount of light reaching the bottom with intermittent sand patches. Good spearfishing can be found at the outer edge of the kelp, but only experienced divers should venture here.

Palos Verdes Point: For experienced divers only, PV Point can be reached by dirt paths at 2101 Paseo del Mar or from nearby Lunada Bay. The bow of the Liberty Ship *Dominator* can be seen sticking out in 20 feet of surge water while the stern section sits on the rocky beach. The surge, along with 10-15 foot visibility,



Two divers view Christmas Tree Cove, deciding on the best point for their entry.

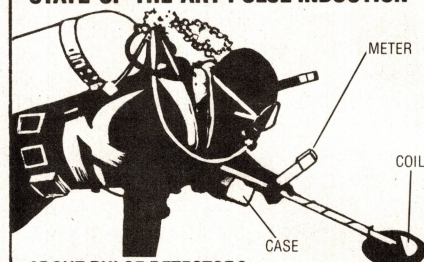
makes diving around the wreck hazardous. Currents are also present. Northwest of the point is a kelp bed with better visibility and a rocky bottom giving shelter to spider crabs, octopi and many species of fin fish.

Lunada Bay: The best access to the bay is at 2300 Paseo del Mar. A dirt path with some steps leads to a well protected beach on the south side of the bay. Visibility is poor inside the kelp bed but improves considerably outside. The bottom is mostly sand but that develops into rocky reefs the further out one dives.

The path down to the bay was made in 1972 as a memorial to the late Mark Roessler Jr., grandson of Palos Verdes Estates' first mayor.

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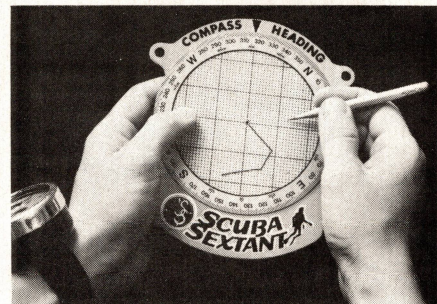
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Christmas Tree Cove: At 2900 Paseo del Mar a steep dirt path leads to a rocky beach, and some of the clearest water along the peninsula. Every kind of game is present in varying amounts. There is a rocky bottom with a depth of 20 feet inside the cove which drops to over 40 feet on the outside. This area is also known as Patterson's Cove after W.C. Patterson who was a prominent peninsula citizen in the late 19th century. Patterson was successful in advocating the development of San Pedro Harbor as a deep water port rather than the waters of the then thriving Santa Monica Bay.



Frequently, diving in the Palos Verdes area requires a steep climb to the site.

Point Vicente: Just south of the U.S. Coast Guard lighthouse on Palos Verdes Drive West there is a small parking lot from which Cardiac Path begins. Good visibility, a kelp bed, and large underwater rock formations make this an especially good place to dive. Depths average 25-30 feet.

A successful kelp restoration project was begun in 1974. The lighthouse, open to the public on Tuesdays and Thursdays from 2:00 to 4:00 pm, was built in 1926 with 800,000 candlepower making it the second brightest lighthouse on the West Coast. It was named after Father Vincente Santa Maria, the first priest to sail through the Golden Gate.

Abalone Cove: The main gate to this beach is located at 5800 Palos Verdes Drive South, but because of the recent land movement, the parking area has been moved north by one-quarter mile. There is a parking fee. The 81 acre sandy beach stretches from Long Point to Portuguese Point. The bottom topography is sandy with intermittent rocks and a kelp bed. It is an ecological reserve where only fin fish can be taken.

Once known as Deadman's Cove, from 1874 to 1877 it was the site of a whaling

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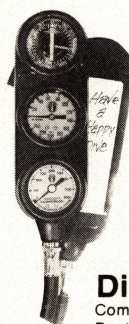
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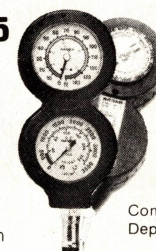
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station that closed for lack of fuel. In the 1920's it was a Portuguese fishing camp. In 1967 Abalone Cove became the spearhead of a kelp restoration project that proved successful by 1974. Overlooking the cove is Frank Lloyd Wright's famous glass church known as the Wayfarer's Chapel.

Portuguese Cove: Access is via Abalone Cove by either snorkeling around Portuguese Point or hiking over and down the point on a very treacherous path. Its seclusion has made it a local nudist beach. Bottom and topography are the same as Abalone Cove, but it is not part of the nearby ecological reserve.

Royal Palms State Beach: Access to this site is from Western Avenue and Pa-



The lighthouse at Point Fermin Park was built in 1874 and operated until 1941.

seo del Mar, and taking the west fork at the bottom of the hill. This is one of the few spots where parking is available near the water. It features a mostly sand bottom with some rocks, kelp and fin fish.

Hundreds of years ago the Gabriellino Indians settled in this area and made use of its natural sulphur springs. In 1900, Ramon Sepulveda built a two story, 40 room hotel and recreation site on the beach. He had mineral water pumped into the bath house. The spa had rock gardens and palm tree lined pavilions. During World War II, the buildings were torn down for coastal defense purposes.

White's Point: Access is via the east fork of the road down from Western Avenue and Paseo del Mar. There is a

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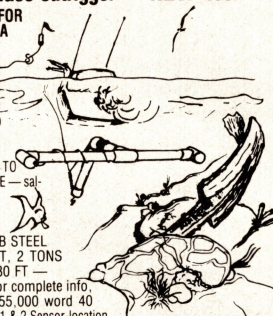
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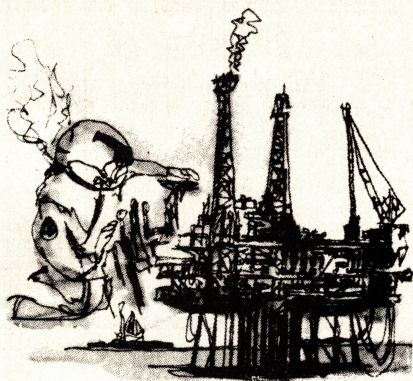


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parking fee. It is a popular dive site for advanced as well as beginning scuba divers because of its parking and well protected cove. The bottom is rocky with scattered sand and some kelp. White's Point proper is an ecological reserve, but east of the point any game but abalone may be taken.

In 1899 12 Japanese fishermen rented two sheds from Don Sepulveda for \$5 a month, and dried 60,000 pounds of abalone at this site. Later there was a Japanese pleasure pier, and the pilings and some walls are still visible. Currently, White's Point is the site of explorations involving sea vents in 30 feet of water. Every weekend Paul Meister and Mike Kleinschmidt head up a group of volunteer divers locating, marking, mapping and measuring the perimeters of these hydrogen sulfide vents.



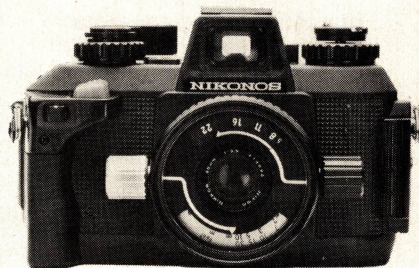
Christmas Tree Cove.

Point Fermin Park: Access to this rocky beach is by steep dirt paths at either 680 Paseo del Mar where the street dead ends, or the far west end of the park at 1151 Paseo del Mar. This is a Los Angeles County Marine Life Refuge with only a limited species of fin fish allowed to be taken. The bottom is primarily rock with increasing sand to the west. Visibility on the whole is normally pretty good.

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Cabrillo Beach: Access to this site is off 36th and Pacific Street with a parking charge. On the ocean side a small jetty with a rocky entry provides interesting viewing of protected abalone and colorful but annoying sea urchins. On the harbor side diving is permitted only with permission of the local harbor master. It has become a well known spot for lobster. Diving the Los Angeles Breakwater can be dangerous owing to the unpredictability of the open sea.

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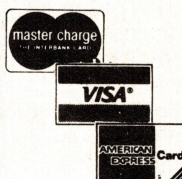
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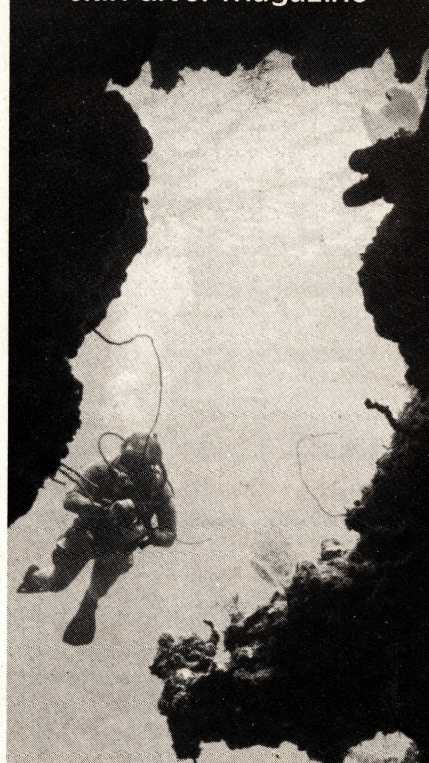
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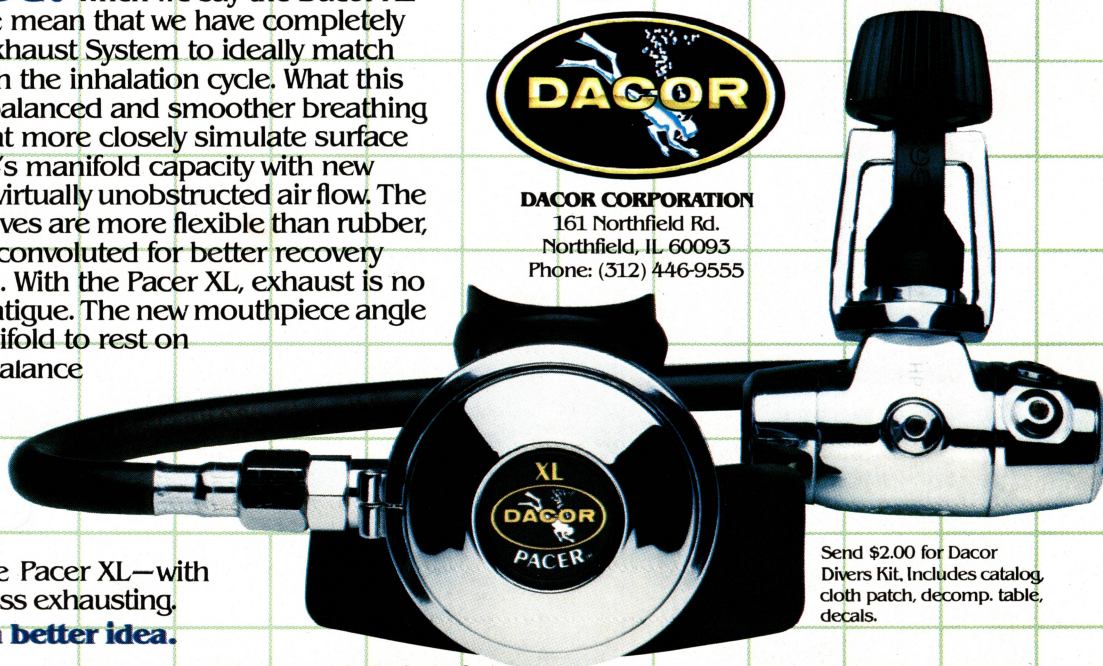
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